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UNITED STATES DISTRICT COURT

EASTERN DISTRICT OF NEW YORK

THE NATIONAL ASBESTOS AND BCBS NJ
WORKERS MEDICAL FUND, et al.)

Plaintiffs,) 98 Civ. 1492 (JBW)

vs.)

PHILIP MORRIS, INC., et al.)

Defendants.)

Deposition of **SUZANNE OPARIL**, taken on Wednesday, March 1, 2000 at 9:25 a.m., at the law offices of Lightfoot, Franklin & White, 400 Twentieth Street North, Birmingham, Alabama before Deborah C.D. Shumaker, Notary Public.

Reported by:

Deborah C.D. Shumaker

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UNITED STATES DISTRICT COURT

EASTERN DISTRICT OF NEW YORK

BLUE CROSS AND BLUE SHIELD)
OF NEW JERSEY, INC. et al.)
Plaintiffs,)
vs.) 98 Civ. 3287 (JBW)
PHILIP MORRIS, INCORPORATED,)
et al.)
Defendants.)

Deposition of **SUZANNE OPARIL**, taken on Wednesday, March 1, 2000 at 9:25 a.m., at the law offices of Lightfoot, Franklin & White, 400 Twentieth Street North, Birmingham, Alabama before Deborah C.D. Shumaker, Notary Public.

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BCBS and NAW

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P R O C E E D I N G S

Whereupon,--

SUZANNE OPARIL,

being first duly sworn to tell the truth, the whole truth, and nothing but the truth, testified as follows:

EXAMINATION BY MR. HOSKINS:

Q. Good morning, Doctor. Could you state your name and spell your last name.

A. Yes. My name is Suzanne Oparil, O-P-A-R-I-L.

Q. Ma'am, are you married?

A. No.

Q. Have you ever been married?

A. No.

Q. So Oparil would be your maiden name, correct?

A. Yes.

Q. Have you ever been known by any other name?

A. No.

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Q. What's that?

A. Not legally or officially.

Q. You were born in Elmira, New York?

A. Yes.

Q. I know where Elmira is.

You went to Cornell University?

A. Yes.

Q. I know where that is.

Where do you live today?

A. I live in

[DELETED]

Q. That is your home address?

A. Yes.

Q. Now, do you have a business address as well?

A. Yes.

Q. Could you give me that, please.

A. It is at the University of Alabama at Birmingham. Do you want the detailed address, mailing type of address?

Q. Yes. What I really want to know is that

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your only business address is where you work at the University of Birmingham?

A. UAB, yes.

Q. Have you ever had any other business addresses other than working at the university?

A. Not for the past 22 years. I have been a full-time employee of the University of Alabama for 22 years.

Q. For example, do you have a consulting company that has a separate address?

A. No.

Q. Do you have a consulting company?

A. No.

MR. HOSKINS: Let me just have this marked real quick as Exhibit Number 1 to the deposition.

(Whereupon, Oparil Deposition Exhibit No. 1, 9/29/99 Report and Curriculum Vitae of Dr. Suzanne Oparil, marked.)

BY MR. HOSKINS:

Q. Ma'am, I am going to show you and your

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attorney what we have marked as Exhibit Oparil Number 1. It appears to be the report of Dr. Suzanne Oparil dated 9/29, 1999. I just want to confirm that this is the expert report we are going off of in this case.

MR. HOSKINS: Maybe Ms. Cohen can help us out here. This is the disclosure for the case?

MS. COHEN: Yes, it is.

Q. Your signature appears on the third page, correct?

A. Yes.

Q. Your curriculum vitae is attached as Exhibit A to that report, correct? It starts on the fourth page?

A. Yes.

Q. The education that is set forth there, does that accurately reflect all of your education?

A. Yes.

Q. You received a Bachelor's degree from

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Cornell University, correct?

A. Yes.

Q. What honors or awards did you receive while you were at Cornell University?

A. I was a graduate with something called distinction in all subjects which means being in the top 1 percent of the class in the College of Arts and Sciences there. That would mean one of the seven top students out of 750.

Q. That was going to be my next question. Which college did you attend?

A. Arts and Sciences.

Q. What was your major?

A. Zoology.

Q. Did you have any sort of a minor degree?

A. No.

Q. Then you were accepted and studied medicine at Columbia University; is that correct?

A. Yes.

Q. Those dates are accurate from '61 to

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'65, correct?

A. Yes.

Q. Did you receive any honors as part of your medical training?

A. Yes. I graduated first in my class, actually, and received a number of prizes. I can't recall what all of them were now. There was a prize in neurology and some various other awards that came along.

Q. Were the prizes based on performance in specific coursework?

A. Some were based on specific coursework. The neurology prize was, and others were based on overall performance.

Q. Now, when you left medical school, what was your plan with respect to the practice of medicine? Did you have one?

A. I wanted to -- yes. I wanted to be a practitioner at that point.

Q. And by that what do you mean?

A. To see patients all the time.

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Q. What type of patients? Pediatrics, all patients?

A. No. Adult patients in internal medicine meaning seeing adult patients whom I would diagnose and treat by means other than surgery.

Q. Now, does that practice have a name, that specialty?

A. Internal medicine.

Q. And you have certain positions listed here. You started as an intern in medicine at Presbyterian Hospital in New York. Is that your first what I will call training outside of medical school?

A. Yes.

Q. What did you study there? What did you learn?

A. There the experience was ten months out of twelve in spending time with patients, with all sorts of medical illnesses; that is, infectious diseases, heart diseases, cancer, rheumatologic diseases, various kinds of

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arthritis and so on. Most of that experience was inpatient, in other words, seeing extremely sick patients in the hospital.

Q. Okay.

A. Sometime in the clinics, although minor, and then two months were spent, one month on the surgery inpatient service, seeing patients who were having operations or had had operations; then one month doing minor surgery outpatient.

Q. Did you receive any awards or distinctions in that program?

A. No, but the awards were not available. The reward was surviving the experience.

Q. You completed it successfully, correct?

A. Yes.

Q. Your next position was junior assistant resident in medicine at the same hospital, correct?

A. Yes.

Q. Briefly, what were your duties and

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responsibilities?

A. There is one level above the intern level, and the junior assistant resident actually supervised the interns and the inpatient services so that each junior assistant resident was assigned two interns, one overseeing male patients and the other overseeing female patients because we had open wards at that time, and then there were ten medical students assigned to the service, so it was a teaching function and oversight on these interns to make sure that they took proper care of the patients prior to being seen by the staff doctors.

Q. Now, at this point were you licensed to practice medicine?

A. Yes.

Q. Which state did you hold your license in?

A. New York.

Q. Are you still licensed to practice medicine in the State of New York?

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A. No.

Q. Are you licensed to practice medicine anywhere?

A. Yes.

Q. Which states?

A. Alabama.

Q. Are you allowed to have a license to practice medicine in more than one state, do you know?

A. I am not sure whether one is allowed or not. It is customary only to be licensed if one does one's work to be licensed only in that state. I believe that there's reciprocity, easy reciprocity from all states other than California and Florida.

Q. Could you describe for me why it was that you came to stop being licensed to New York other than what you have just told me.

A. I had left New York State.

Q. Do you have any disciplinary record with respect to your licensure in New York

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State?

A. No.

Q. How about in Alabama?

A. No.

Q. Have you ever been licensed to practice medicine in any state other than New York or Alabama?

A. Yes.

Q. Which other states?

A. Massachusetts and Illinois.

Q. And Illinois. Okay.

Is it fair to say that as you moved from one training position to the next, you would change your licensure?

A. Yes.

Q. For example, in 1967 you went to work at Massachusetts General Hospital, correct?

A. Yes.

Q. Is that when you became licensed to practice medicine in the Commonwealth of Massachusetts?

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A. Yes.

Q. Have you had any disciplinary issues with your licensure in Massachusetts?

A. No.

Q. How about in Illinois?

A. No.

Q. I think in your previous deposition you were asked about Massachusetts General Hospital's policy with respect to funding or accepting CTR grants, correct?

A. Yes.

Q. I think you were also asked about that during your trial testimony in the Engle case, correct?

A. Yes.

Q. Do you know how the Engle case resolved?

A. Not completely, no.

Q. Do you know what findings, if any, were found with respect to the Council for Tobacco Research in that litigation?

A. In detail, no.

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Q. In general?

A. In general, I believe that the Court found against CTR.

Q. They were found to be held legally responsible in that case? You are aware of that, correct, ma'am?

MS. COHEN: I object as to -- David, you are not going to pull that out, are you?

MR. HOSKINS: I am, if you need me to. Let's mark this as Oparil 19, please.

(Whereupon, Oparil Deposition Exhibit No. 19, Verdict Form for Phase I in the Engle Case, marked.)

BY MR. HOSKINS:

Q. Ma'am, have you ever seen this document before that is called a Verdict Form for Phase I in the Engle trial?

A. No.

Q. Has anyone ever described to you before what occurred in the case where you were offered as an expert to testify on behalf of CTR?

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A. Reading the newspaper, I learned that the jury had found against the Defendants.

Q. Do you see how they have various questions here in this verdict form? If you would turn back four pages to question number 4. It says "fraud and misrepresentation".

Are you there, ma'am?

A. Yes.

Q. "Did one or more of the Defendants make a false statement of a material fact, either knowing the statement was false or misleading, or being without knowledge as to its truth or falsity, with the intention of misleading smokers", and then it asks you to answer yes or no and to determine when the conduct occurred, and if you turn the page, ma'am, do you see what the jury said with respect to the Council for Tobacco Research-U.S.A.?

A. Yes.

Q. They answered yes, and they answered that that conduct occurred both before and after

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May 5, 1982, correct, ma'am?

A. Yes.

Q. If you see, the question 4a deals with "fraud by concealment". If you would turn to page 6. You see that the jury answered yes with respect to Council for Tobacco Research-U.S.A. and answered that the conduct occurred both before and after May 5, 1982.

Do you see that, ma'am?

A. Yes.

Q. If you turn to question number 5. The jury was asked to determine whether or not two or more of the Defendants entered into an agreement to misrepresent information relating to the health effects of cigarette smoking or the addictive nature of smoking cigarettes with the intention of smokers and members of the public relied to their detriment, and do you see what the jury answered with respect to Council for Tobacco Research-U.S.A.?

A. Yes.

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Q. They answered yes, correct?

A. Yes.

Q. Does that comport with your understanding of what happened at the Engle trial that you learned from the newspaper accounts?

A. The newspaper accounts, to my recollection, didn't specify very much about CTR, but with respect to the tobacco companies, yes.

Q. Now, am I clear that that was the first time you had ever testified live in trial as an expert witness?

A. That is correct.

Q. Now, I understand that, and we will go through these in a second, you have given a number of depositions in conference rooms like this, perhaps not as nice as this, in tobacco-related litigation on behalf of the Council for Tobacco Research.

A. Yes.

Q. Other than those types of depositions, have you been deposed before?

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A. Yes.

Q. In what type of case?

A. In 1989, this was in a case when the Federal Trade Commission, the FTC, accused the Campbell Soup Company of improper advertising, specifically relative to the claim that, quote, soup is good food, unquote.

Q. Who did you testify on behalf of?

A. On behalf of Campbell's.

Q. What was the outcome of that litigation?

A. The litigation never went to trial. The FTC lawyers were satisfied on the basis of the experts for Campbell's that the claim was generally supported in the sense that the issue was is the salt in soup bad for you or not.

Q. Okay.

A. My position, and the position of the colleagues who testified on behalf of Campbell's, was that for normal people, most people in the population, a diet that is moderate in salt and even a fair amount of salt in given servings is

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not particularly deleterious.

Q. What was the subject matter of your testimony?

A. Reviewing the literature on salt and blood pressure.

Q. What law firm did you work with in that case?

A. I don't recall.

Q. Do you know the law firm that Ms. Cohen works for?

A. Yes.

Q. Could you give me the name?

A. Debevoise & Plimpton.

Q. Was it that law firm?

A. No. It was a Washington law firm, but I don't recall.

Q. Arnold and Porter?

A. No.

MS. COHEN: David, I will get you the Martindale if you want to go through it. It is your deposition.

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MR. HOSKINS: No.

Q. Let me jump back now to Mass General, and I am not going to go through the policy with Mass General again that Ms. Nial went through in your deposition.

What's the current policy with respect to the University of Alabama? First of all, what is the title of the university you work for, University of Alabama at Birmingham --

A. Yes.

Q. -- or just University of Alabama?

A. University of Alabama at Birmingham.

Q. Does the University of Alabama at Birmingham have any current policy with respect to accepting research funds from the tobacco industry?

A. To my knowledge, no.

Q. Now, we talked about Engle. Do you know whether or not that Council for Tobacco Research is still in existence?

A. Yes, I know.

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Q. What do you know?

A. It is no longer in existence.

Q. How is it that that came --

A. It no longer funds grants.

Q. Okay.

A. Whether it has an administrative structure still, I do not know.

Q. How is it that you learned that they no longer fund grants?

A. I learned it from reading the New York Times in the first instance.

Q. And what did you learn?

A. That as part, I believe that as part of the large settlement with the State's Attorneys General, one of the conditions was that the CTR would stop funding research.

Q. Do you have any other knowledge other than what you learned from the New York Times?

A. Yes, in the sense that the annual reports, which are one of my major reliance sources and documents, stopped in 1997.

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Q. Did you discuss with anyone or conduct any investigation into the reasons why CTR stopped funding medical research grants?

A. I believe that the 1997 document states that the program was stopped as a condition of the tobacco litigation.

Q. But other than the document and the New York Times, did you conduct any further investigation or inquiry into the reasons why the Council for Tobacco Research and the tobacco companies agreed as part of this settlement to in effect put the Council for Tobacco Research out of the business of providing research grants?

MR. BURTON: Object to form.

A. No.

Q. Now, returning, if you could, to your curriculum vitae, you spent several years at Massachusetts General.

What did you study there?

A. In the first year I was a senior assistant resident in medicine, and in that role

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I spent part of the time consulting with specialty services, surgical service, gynecology service and so on in medical conditions being their medical consultant. I spent part of the time as a teaching resident on the medical wards, so I was helping the interns and the junior residents deal with the medical students and discussing things on rounds, part of the time in the emergency room, especially the triage officer who decides which patients go to which services or who should be considered for admission to the hospital, who gets rapidly treated, who goes home, who goes to a clinic and so on.

Q. At some point I take it you decided to go into the teaching field?

A. Teaching and research. Academic.

Q. Academic field?

A. Academic.

Q. As opposed to perhaps your initial thought which would be that you would treat patients, correct?

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A. Yes.

Q. Could you tell me how it was that you made that transition from thinking that your career was going to be treating patients to deciding that you wanted to go the academic route instead?

A. Well, I really was inspired by my mentor at Massachusetts General, Edgar Haber.

Q. Could you spell his last name.

A. H-A-B-E-R. The first name is Edgar, E-D-G-A-R. Recently deceased, actually. At that time he was the director of the Division of Cardiology or the Cardiac Unit, as they call it there, and he was a very brilliant investigator and was intellectually exciting and through that experience convinced me that I could make larger contributions by doing investigations, by having an academic life doing investigations in the pathophysiology of disease processes rather than seeing patients all day full time.

Q. Now, Dr. Haber, to your knowledge, did

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Dr. Haber ever accept grant money from the Council for Tobacco Research?

A. I have no idea.

Q. In your review for the deposition, did you ever see his name as a grantee for the Council, from the Council for Tobacco Research?

A. No, but I did not look for it specifically.

Q. And, to your knowledge, then, was he ever on the Scientific Advisory Board of the Council for Tobacco Research?

A. No.

Q. Your first academic position was an assistant professor of medicine at the University of Chicago, correct?

A. Yes.

Q. Now, you competed for that position?

A. I would say so, yes.

Q. You had to make application, correct?

A. No. Actually, they came to us.

Q. Were you looking for academic

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appointments at that point?

A. Yes.

Q. Were you being considered by other academic institutions when you accepted the position at the University of Chicago Medical School?

A. Yes.

Q. What other positions were you looking into?

A. The University of Pennsylvania in what was the Pulmonary and Cardiology Division; the University of North Carolina; University of Wisconsin; and, actually, it's terrible. There was one other institution.

Q. Johns Hopkins?

A. I can't recall. No. Not Johns Hopkins.

Q. Why not?

A. Their name didn't come up. I guess they weren't looking for anyone to do hypertension specifically.

Q. And why is it that you chose the

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University of Chicago over the others?

A. Actually, I was offered all of the other positions -- oh, University of Texas Southwestern, Dallas. Sorry.

Q. And you were offered a position at all of those?

A. I was offered a position at all of those places.

Q. Okay.

A. I thought that the University of Chicago was the best place academically. Although you could argue that Chicago and Pennsylvania are on the level. I got along very well with the then both division director and head of medicine, Dr. Hans Hecht, who is also deceased.

Q. Could you spell his last name.

A. The first name is Hans, H-A-N-S, and the last name is H-E-C-H-T. And I was sort of inspired by the number of Nobel Laureates who were in the immediate environment there. The

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institution is somewhat similar to John Hopkins in the sense that it is relatively small, not huge and very highly intellectual quality of the faculty and of the students.

Q. Now, did you work with Dr. Hecht?

A. Well, I've had a great misfortune there. Dr. Hecht died suddenly when I was in transit from Boston to Chicago, so we never had the opportunity to work together.

Q. Was there someone who you would consider your supervisor, a dean or a department head when you were there?

A. I was quite independent which was one of the attractions of the position. They evolved. They had a very peculiar administrative structure in that they appointed co-heads of the division, Dr. Harry Fozzard, H-A-R-R-Y, Fozzard, F-O-Z-Z-A-R-D; and Dr. Leon Resnekov, R-E-S-N-E-K-O-V, and they were the two chiefs. I gravitated toward Dr. Fozzard because he was the research-oriented individual, primarily

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research-oriented anyway.

Q. Dr. Hecht, did you ever see whether or not Dr. Hecht ever accepted grant money from the Council for Tobacco Research?

A. I did not look for it. I don't know.

Q. Do you know whether he was ever a member of the Scientific Advisory Board?

A. He was not.

Q. Dr. Fozzard, did he ever accept CTR funding or was he ever a member of the Scientific Advisory Board, to your knowledge?

A. I am unaware of whether he accepted CTR money. I know that he was not a member of the Scientific Advisory Board.

Q. Dr. Resnekov, to your knowledge, did he ever accept CTR funding or serve on CTR's Scientific Advisory Board?

A. He definitely did not serve on the Scientific Advisory Board. I am unaware of whether he received research funding.

Q. Now, when you were at the University of

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Chicago Medical School you were performing research? Is that a fair characterization?

A. I have always done research, done patient care and teaching, all three.

Q. When you were at University of Chicago, break it down for me. How much time research, how much time teaching, how much time patient care?

A. Probably 50 to 60 percent research, maybe 40 percent patient care which I regarded as too much, and the rest teaching, maybe 10 percent.

Q. Now, was there a specific area that you were researching when you were at Chicago?

A. Yes.

Q. What were you focusing on in that part of your career?

A. We worked with high blood pressure in general and specifically the role of renin, R-E-N-I-N, on the angiotensin system in the regulating of blood pressure, and also even more

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specifically, the metabolism of the peptides, angiotensin I to angiotensin II.

Q. Now, there came a time when you left the University of Chicago and came to the University of Alabama School of Medicine where you are today, correct?

A. Yes.

Q. About 1977, correct?

A. Yes.

Q. Now, the associate professorship of medicine, is that a tenured position at the University of Chicago?

A. Yes.

Q. So you had attained tenure at the University of Chicago at the time you left?

A. Yes. I attained tenure in 1975.

Q. Could you describe for me why it was you chose to leave the University of Chicago and come to the University of Alabama?

A. Yes.

Q. Okay. Please do.

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A. The principal reason was that there was not, at least for me, an opportunity for program development. I was the person doing hypertension work and this angiotensin work, and my supervisors and the administration were not particularly interested in bringing anybody junior in to help me.

Number two, the division was small, the cardiology group was small, and I felt that I was spending too much time doing clinical work, seeing patients, particularly since I had grants. I didn't think that the future career building outlook was particularly good.

Q. Now, when you were at the University of Chicago Medical School did you even know that Council for Tobacco Research existed?

A. No.

Q. You had never heard of the Council for Tobacco Research, correct?

A. That's true.

Q. You mentioned that you were receiving

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grant money. Was there a principal source of grant money in 1971 through 1977, that time frame when you were in Chicago?

A. There were two principal sources: One was what was then the National Heart Institute, basically the National Institutes of Health.

Q. So the National Heart Institute was what it was called then, and it became what name later?

A. Then it became the National Heart and Lung Institute.

Q. What is it known as today?

A. And then it became the National Heart, Lung and Blood Institute.

Q. Is there anything left?

A. The heart people sort of are always fighting the cancer people for turf, so we try to gather in things.

Q. That was one of them, the National Heart Institute. You have just gone through the other names.

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What was the other principal funding source in the '70s when you were at the University of Chicago?

A. The American Heart Association.

Q. Now --

A. AHA.

Q. There were other funding sources; is that fair to say, but these focused on your specialty? Is that a fair characterization?

A. Yes.

Q. You mentioned previously that there was all this fighting between the heart side and the cancer side. Could you describe what you mean by that.

A. Well, there are two principal, in general, terms, chronic disease processes that affect large proportions of the population, and they are major causes of death: One is cardiovascular disease, which is the leading cause of death in the world, and then cancer, which is the second leading cause of that.

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Q. Is it fair to say your professional experience has been in the cardiovascular disease area?

A. Yes.

Q. Now, I'm going to just call it the National Heart Institute. You were familiar with applying for grants with that institute? Fair statement?

A. Yes.

Q. You received grants from that institute, correct?

A. Yes.

Q. When you were at the University of Chicago, were there any limits, annual limits on the grants you could receive from the National Heart Institute?

A. None.

Q. I think you realized that when you were at the Council for Tobacco Research, was there a limit on the funding you could receive? Sorry. I don't want to ask it that way.

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When you were receiving grant money from the Council for Tobacco Research, were there annual limits on the funding you could get?

MS. COHEN: I object to the form. David, it is not clear whose limits you are talking about.

Q. CTR's limits.

A. I can tell you what I was told by Dr. McAllister.

Q. You were told a hundred thousand dollar limit; is that correct?

A. I was told that I could apply for any amount of money. I asked him, because it is clear that although theoretically anyone can apply to any agency for any amount of money, one could ask for a hundred million dollars and they would laugh at you in practical terms, so I asked him in practical terms what kinds of grants do you fund.

Now, for example, at the NIH there's not a limit, but we are told that the grants are

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modular in the limit. The practical limit is $250,000 now.

Q. By now you mean today?

A. Today. It was smaller then. It has gone up somewhat more rapidly than the GPI, but not as rapidly as we would like. I was told by Dr. McAllister that in general, the grants-in-aid that are peer reviewed by the Scientific Advisory Board don't go over $100,000 so that the recommendation would be get close to that point in the request and then hope that if the grant was approved, that the enthusiasm of the committee would be such that it would be funded close to that level.

Q. Now, as a researcher, it is important to know these practical limits of grant money. Would you agree with me?

A. Yes.

Q. And I think you gave a good example, that if you have got a hundred million dollar study that needs funding but the practical limit

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is going to be a hundred thousand dollars, if you ask for the hundred million, you are not going to get much response because you are not going to get much done for the hundred thousand that they have to offer. Fair statement?

MS. COHEN: Object as to form. You can go ahead.

A. It is not an unfair statement. I think it would be more likely that the agency would simply say we do not want to deal with this issue because the scope of this proposal is so far beyond us and we don't want to be a minor player in a major endeavor.

Q. And as an investigator, you are experienced with getting more than, I think it's called co-funding, correct?

A. Yes.

Q. You don't just go to one source for funding? You go to as many who will fund your study, correct?

A. That is correct.

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(Noise interruption.)

MR. HOSKINS: It was the ice machine last time. Now it is landing fields.

MS. COHEN: That's the first one.

(Discussion off the record.)

BY MR. HOSKINS:

Q. Let's turn back now to the National Heart Institute.

Were there any practical limits on an annual basis to funding when you received grant money from them?

A. That's a long time ago. I am thinking about 1971 when I made the first application. I was advised by Harry Fozzard, who was sort of my mentor after Dr. Hecht died, to keep the request under some amount, and I can't remember the amount that was the practical limit. I honestly cannot remember the amount it was so long ago. It was such a joke. It may have been $25,000 or something.

Q. Is it your experience that all research

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funding organizations establish practical limits?

A. Yes. And now, in fact, some of them have statutory limits. For example, the current director of the National Heart, Lung and Blood Institute, Dr. Claude Lenfant, L-E-N-F-A-N-T, who is French, and he is somewhat enamored of rules, has set upper limits, for example, on program projects. The large grants cannot be over one million dollars a year, direct costs. The increments cannot be more than 10 percent per year. This modular granting of money now comes in $25,000 segments, and the highest modular is 250,000. That is not going to be questioned, but anything larger than that can be applied for but comes under extra scrutiny.

Q. Now, do you remember the year that you first received funding from the CTR grants-in-aid program?

A. Yes. 1989.

Q. In 1989 the practical limit, a hundred

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thousand dollars, can you tell me how that compared with other practical limits that were in place at the time from other research funding organizations?

A. I believe at that time that it was around the same or slightly less than the NIH, National Institutes of Health. It was larger than the American Heart Association. American Heart has funded relatively large numbers of smallish grants. At that time probably the funding limit was perhaps 25 or $30,000 from the national association and less from the affiliates. The American Cancer Society has funded larger grants because it has always had much more money, and there are fewer investigators.

Q. Now, you talked about in your trial testimony something called the Young Turks, the Old Turks and getting spaded, which I guess means buried.

A. Yes. Spaded under.

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Q. Oh, spaded under. I just liked spaded. I mean, spaded under sounds even worse.

Now, you were a member of this Young Turks organization?

A. Yes.

Q. Tell me what it was.

A. The Young Turks has changed its name. It was then called the American Federation for Clinical Research or the AFCR. Now it is called the American Federation for Medical Research. I was actually the president of that organization in 1982. It was at that time the largest clinical research organization in the world. We had about 13,000 members. Clinical research means, has many definitions but means research which relates to disease processes. The early definition was in humans. Things have moved in a reduction of fashion toward animal models and cells and in vitro studies with genes, but the common denominator is disease-related.

Q. And you could be in this organization

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until you were 35?

A. 41.

Q. 41. And then --

A. Out.

Q. And then you became an Old Turk?

A. No. Then you became spaded under. Nothing. You became a senior member in the sense that you could still go to the meetings and you could sponsor other people giving papers like younger people giving papers, but you were not supposed to give papers yourself.

Q. Is it fair to say one of the functions of this organization was to assist young researchers in getting started, correct?

MS. COHEN: Object to form. You can go ahead.

A. It was to give them a forum to present their work.

Q. One of the issues I think you raised when you were president of the American Heart Association was that a lot of the funding sources

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were focusing on the established researchers and there wasn't enough what I will call seed money for new and young researchers who might have innovative ideas, correct?

A. Yes.

Q. Is that one of the reasons why the American Heart Association's practical limits are lower, because is that an outgrowth of one of your policies, to try to focus the research funding on younger researchers who might have something new to bring to science?

A. Yes, but I cannot claim credit for that. The Heart Association has always had relatively small grants. They have always favored young investigators or older investigators changing fields, and they have always favored, although technically they don't acknowledge this, they favor M.D. investigators over Ph.D.s.

Q. Now, do you have an opinion whether that is a good thing or a bad thing, what the AHA's policy has been in this regard?

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A. I think it is a good thing.

Q. Why is that?

A. Because increasingly, careers in biomedical research, particularly for physicians, have become unattractive. The difficulty in trying to compete with individuals who are essentially full time research, there's Ph.D. trained individuals competing with foreign nationals who have an incredibly intense work ethic, particularly the agents being in an environment where financial incentives are important, and in most cases physicians in private practice, at least until very recently, have been more rewarded financially than academic physicians. All these things weigh against younger people entering the field, so anything that can be done to encourage or stimulate or make it easier for people to get initial funding is positive.

Q. Okay, ma'am. Now, based on your review of the large number of documents that you have

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looked at and have been produced to us as reliance materials in this case, can you tell me whether or not the Council for Tobacco, well, can you tell me whether there were any patterns with respect to the Council for Tobacco Research with respect to funding young investigators or investigators changing fields versus funding established investigators?

MS. COHEN: Objection to form. Go ahead.

A. That's a complicated question since there were, what, 1,200 investigators, 6,500 papers, so there's a clear -- in looking at the annual reports which do give you sort of the clear summary of what has been supported, there does seem to be a balance between younger people, and even if you don't know them, you can tell that they are younger by the fact that they are faculty ranked instructors and assistant professors, a fair number of them that are funded in addition to the old full professors and

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well-known names, so that I believe both.

Q. Now, at the time that you decided to move on from the University of Chicago, were you considered by other academic institutions other than the University of Alabama at Birmingham?

A. Yes.

Q. What other institutions were you considered by?

A. I looked at 11 jobs.

Q. Okay.

A. I cannot list them all, of course. University of North Carolina was one. University of Rochester was one where they wanted me actually to be head of cardiology. Both of those places, Rochester and North Carolina. University of Wisconsin again. Pennsylvania again. But the choice came down to either University of Minnesota or here.

Q. Why did you choose the University of Alabama over the University of Minnesota?

A. The University of Alabama at that time

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had immensely greater resources and had a focus on cardiovascular research. The chair of the Department of Medicine, Dr. Tom James, that's an easy one, was a cardiologist and also retained the position of head of the division of cardiovascular diseases. He was chief of cardiology as well as head of medicine. There had been a lot of building here. There was a lot of space available. They offered me two or three times as much space as any other institution including Minnesota and the opportunity to hire additional faculty.

Also, there was the unique situation in that I was hired simultaneously with a more senior physician/scientist, Harriet Dustin, D-U-S-T-I-N, who was as old as I am now, so it was about the twilight of her career, and so was interested in building a group but wasn't particularly hands-on, so it was a unique opportunity for me to be the chief operating officer while she was chief executive officer of

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this effort.

Q. Now, by "group", do you mean a group medical practice?

A. No. More of a research group.

Q. Is that something separate from the university?

A. No. Within the university.

Q. Okay. Because you said you were going to be like chief operating officer.

A. Well, no. In university terms, the structure was something called the Cardiovascular Research and Training Center, CVRTC, and it had space which was occupied by, was not fully occupied, number one, so that we could have room to expand, and there were people from the Department of Medicine, Department of Physiology, Department of Surgery and Anesthesia, Pathology, all of whom had cardiovascular interest in there, and we had support from the State of Alabama. We had state lines at that time which was nice to have a floor of support.

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Q. Now, what are state lines? What does that mean?

A. It is a line in the budget of the state that said Cardiovascular Research and Training Center. Then there was another line called hypertension research. That was most attractive.

Q. At the end of the line was a dollar sign with some numbers?

A. Dollars, yes, sir.

Q. That was guaranteed state funding?

A. Yes.

Q. Do you still have that today?

A. No.

Q. When did that go away?

A. That went away in about 1982 when Dr. James was no longer chairman and the new chair assimilated all of this effort or all of these resources into the departments.

Q. But you still get funding from the state? You just don't get a line item funding?

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A. Yes.

Q. Did your funding decrease drastically in '82?

A. Yes. It was actually later than '82, but it did decrease drastically.

Q. When you started at the University of Alabama what was your annual budget in rough figures, if you can estimate it?

A. It was probably -- this was 1977, so it was probably a million dollars, something like that.

Q. You were able to hire other faculty members and I guess people who worked in the institute, correct?

A. Yes.

Q. Now, at its biggest point how big did this institute get in a number of full-time equivalents or doctors or employees?

A. It's hard to -- there are different layers, okay? With respect to the hypertension effort, eight faculty was the largest, and the

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entire institute were people who had joint appointments. It might be 30, 40 people, faculty, and then many support people.

Q. And you worked in the hypertension side, correct, portion?

A. Yes.

Q. Now, after losing the line item budget as a result of the reorganization, what happened to the number of faculty at the hypertension portion of the institute?

MS. COHEN: Object to form. Go ahead.

A. It decreased.

Q. To what?

A. To about five. Now it's five.

Q. What happened to the three other faculty members?

A. One is a woman who when one of the salary guarantees were removed, elected to move from the Department of Medicine, where we are, to the Department of Physiology and Biophysics. She is still at the university and professorial

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rank.

Another went to a biotech company in Houston because he was disappointed again at not having salary guarantees.

Another went to a medical school in Texas at San Antonio where again there are salary guarantees for basic science.

Q. Now, what is a salary guarantee as you are using that term?

A. The salary guarantee, which we do not have that in the Texas system, for example, if you have a full-time position, you are assured that your salary will be paid, whether you have grants or not.

Q. You mean you don't have a salary guarantee?

A. No. I am tenured, but our salary guarantee is at a very low level. It is like $30,000 a year.

Q. So you do have a $30,000 salary guarantee?

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A. Yes.

Q. Does that mean you only make $30,000 a year?

A. That means, if you take me as an example, if my bosses decided to get rid of me and if I lost my grants and if I didn't see any patients, they would only be obligated to pay me $30,000 a year. That, in fact, has never happened.

Q. But you don't make just $30,000 a year?

A. No.

Q. Well, how do you get the rest of your salary?

A. It comes from grants or it comes from several different kinds of grants, the National Institutes of Health grants-in-aid. We have a contract from National Heart, Lung and Blood for a large clinical trial. We do many clinical trials in the cardiovascular disease area studying various therapies for patients with

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hypertension, hyperlipidemia, cholesterol problems, heart failure, peripheral vascular disease problems in the cardiovascular area. Then I do also see patients. There is also, as you said, some state money.

Q. Now, there was a time before when the faculty had eight members, you had a higher salary guarantee, correct?

A. No, but we had more money.

Q. Because I thought you mentioned that a couple of the people left because of the salary guarantee issue.

A. The way we were set up, and our setup now in the clinical departments, medicine is a clinical department, there are not salary guarantees except at this low level. In the basic science departments, the salaries are fully guaranteed. The guarantee of these faculty members of the salaries came from me because I could say if I had $600,000 a year floor, I could say, yes, I will be able to pay you no matter

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what.

Q. Are you comfortable telling me what your various salaries were as you worked through the University of Alabama?

A. If I can remember, yes. Sure.

Q. I am just trying to get a feel for this. When you had your own line item, for example, what would your salary have been?

A. The salary was never influenced by funding source.

Q. Okay.

A. Okay?

Q. But what would your salary have been?

A. I started at -- I can tell you when I moved here in 1977, I was making $45,000 a year.

Q. Okay.

A. I am now making from the university about 180-something. It's hard to remember because so much is deferred and so much tax is taken out. I don't bring very much home.

Q. We all know.

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A. Yes. So something like that. The increments --

Q. You could be a first-year associate at Ms. Cohen's law firm for about $180,000, right? Isn't that the going rate?

A. I thought they did better.

MS. COHEN: Not yet, but don't give anybody any ideas.

Q. You may have already answered the question, but when the salary guarantees go down, how is it, for example, that you are able to earn $185,000 a year in salary?

MS. COHEN: I object as to form because that mischaracterizes the prior testimony about the salary guarantees.

Q. I think you can answer that. Did you understand what I was trying to ask?

A. Yes. Because the amount of money that I make doesn't have anything to do with what's guaranteed. Most of it is soft money.

Q. What does that mean?

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A. Meaning it is money that I bring in from grants, from my own clinical practice, from clinical trials.

Q. Now, what's the most you ever earned as a salary during your career?

A. What I am earning now.

Q. 185?

A. It is like 185, roughly.

Q. And you have excluded from that your consulting fees in this litigation?

A. Oh, yes. None of that is included.

Q. Like, for example, to earn a salary of $185,000 and then to also fund the other members of your program, how much grant money do you need to bring in on a given year?

A. We bring in about, the group brings in between two and three million.

Q. Now, does the university get a cut?

A. Oh, yes.

Q. So how does that work? Let's say that two or three million comes in every year. How is

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that distributed?

A. Okay. These are direct costs. Most of this is grants, contracts, and I am talking about direct costs so that essentially they can't take anything from the point of view of the NIH funding. None of that goes away. That all comes to us.

Q. Okay. Right.

A. So, for example, one of my people who is a Ph.D. has a career development award. A hundred percent of his salary is covered by grants, and so his income is not governed by the amount of money that comes in. It is pretty much lock-step type of salary scale with increases somewhat proportionate to merit but over a range, so you can't give anybody more than a 10 percent raise.

Another who is a full professor but on a research track also has his entire salary covered, the other Ph.D.

The junior M.D. in the group who

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oversees the clinical trials has his salary mostly from the clinical trial income, and there the arrangement is say we get a million and a half from clinical trials. The institution takes 19 percent off the top as indirect costs. Everything else goes to us.

Q. You don't pay rent for your space, though?

A. No.

Q. When you started -- well, let me ask it this way:

Do you recall when you first applied for Council for Tobacco Research grants-in-aid funding?

A. Yes.

Q. What is it, if anything, that led you to make application that particular year?

A. I had met Dr. McAllister that summer at a meeting.

Q. And how is it that the meeting led you to decide to apply?

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A. The meeting had to do with, I remember very well, had to do with the role of the endothelin and vascular tone, and that was the time where everyone was giving acetylcholine, A-C-E-T-Y-L-C-H-O-L-I-N-E, and getting vascular dilatation, and the work led to work on NO, capital N, capital O, and a Nobel prize from some of the presenters actually there.

My group had had a chance, my lab had had a chance of research direction. We had some interesting new data, but they were outside of the scope of what we were funded for, and I happened to meet Dr. McAllister actually at a breakfast, and we said what do you do, found out what he did and what CTR is, and it seemed like a logical area where we could develop an additional area of work. We could develop out of that program.

Q. And had you not been able to receive grant-in-aid funding, what would have happened to that interesting new data that was outside the

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scope of what you were funded for?

A. We might have dropped it.

Q. And is it fair to say that you needed additional funding to continue in that new research direction?

A. Yes. We had two choices, really, to try to scramble around working at a very low level accumulating enough data to get funded by the NIH, and one of the criticisms of the NIH is that so much is demanded of the applicant for grants, that essentially you almost have to have the study done before you get funded, and so that's hard for the smaller laboratories. This allowed us to proceed much more rapidly.

Q. Did anything ever come of this new avenue of research?

A. Yes.

Q. What was the result?

A. We believe that we've made a very important contribution in determining what are the factors that cause the blood supply to the

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lung, the pulmonary vasculature to respond to reductions in oxygen tension. There is a constriction. The vessels in the lung constrict down under conditions of low oxygen tension as if you are on top of a mountain or you had a lot of carbon monoxide in the blood or if you are put into a chamber that doesn't have much oxygen.

People had searched for 20 or 30 years for a mediator of this process; in other words, what does it. We believe that what does it is a peptide small protein called endothelin, E-N-D-O-T-H-E-L-I-N, that is made by the lining cells of the blood vessels in the lung. We believe that that is an important discovery.

Q. Now, were you funded solely by CTR for that research?

A. In its inception, yes.

Q. But in its entirety?

A. No.

Q. Who else funded that research?

A. Now it is being funded by the National

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Institutes of Health, National Heart, Lung and Blood Institute and actually Dr. Lenfant. The institute director is a pulmonary physician.

Q. What was the total research funding from its inception to present? Do you know? Can you break it down?

A. Well, it is complicated because there were two projects. One looked and still looks at the effect of atrial natriuretic peptide, ANP, which is an antagonist, in effect an antagonist of this vasoconstriction. We have looked at that, how it works, what the receptors are and so on. And then we have looked at endothelin itself and how its production is regulated by low oxygen, how the gene is regulated and something about signal transduction within the cell, so there are these two projects that were funded by the CTR. The one on atrial natriuretic factor or peptide was '89 to '91. The one on endothelin was '92 to '95.

Now there are two what's called RO-1

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grants or individual research grants funded by National Heart, Lung and Blood really simultaneously. The principal investigator is Dr. Y.F. Chen, C-H-E-N, of those, but I am very intimately involved in this. It is just that I can't carry forth all this by myself.

Q. I am trying to get a feel for the total dollar figure.

A. The total dollar figure from the CTR was about probably $450,000, an average of maybe 85,000 over six years.

Q. Okay.

A. I am not sure how big his budgets are, but the direct cost is probably about 170 or 180,000 a year, and they are five-year grants, and I think he is in the first cycle, so that would be five times 180 times two, direct. Then the Government spends --

Q. About 1.6 or 1.7 million?

A. Yeah. Then the Government spends an additional 42 percent of that as indirect costs

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that go to the university.

Q. You add on 42 percent that they give to the university?

A. Yeah, but we don't see that. That's electricity and things.

Q. Do you want to take a break?

MS. COHEN: Yes.

Q. Let's stretch our legs.

(Recess taken -- 10:34 a.m.)

(After recess -- 1:43 a.m.)

BY MR. HOSKINS:

Q. Ma'am, --

MS. COHEN: Hold on. Sorry. I apologize.

Q. When the decision was being made to apply for grant-in-aid funding, was there any discussion amongst your colleagues at the institute?

MS. COHEN: I object as to form. Which funding?

Q. Well, your first funding started in

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1989, correct?

A. Yes.

Q. And then you had a relationship over a number of years, correct?

A. Yes.

Q. About $500,000 in funding?

A. Total, yes.

Q. Now, when the decision was made to first seek funding, did you discuss this with your colleagues at the vascular institute, your group, if you will?

A. Not particularly, no.

Q. Was there ever any objection voiced to seeking funding from the Council for Tobacco Research?

A. No.

Q. What investigation did you do into the history of the Council for Tobacco Research before seeking funding?

A. Dr. McAllister sent to me a copy of I think the previous year's annual report which has

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a little history about how the CTR came to exist and also summaries of the research, abstracts of the research that have been supported in that year, and then I think at the bottom of the volume there is a listing of everybody that has ever been supported by name and maybe the project by name.

Q. Other than receiving that information, did you conduct any further investigation into the history of the Council for Tobacco Research before applying for your initial grant?

A. No.

Q. When you looked at the list of Tobacco, the annual report from the previous year, did you recognize any names from other researchers at the University of Alabama?

MS. COHEN: Objection as to form. Go ahead.

A. I didn't look specifically for names from Alabama. I saw names of investigators that I knew.

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Q. What investigators did you recall seeing that you knew at that time?

A. There are a few people that I can think of offhand. Michael Karin, K-A-R-I-N, was at the University of California, San Diego and works with gene regulation. I think Harold Varmus, V-A-R-M-U-S, was in there at that time, and he actually was in the class behind me at Columbia P&S. He was the Nobel Laureate, became pretty famous, got to be director of NIH, the whole thing and now has gone to Sloan Kettering and is the medical director there or whatever, the chief president, something like that.

There were a number of people working with nitric oxide, like the best known and father of the field is Erwin Fridovitch, F-R-I-D-O-V-I-T-C-H. He is a biochemist at Duke, and he really started this field of nitric oxide.

Then there's some other people that are like followers of him, one of whom is Bruce

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Freeman, F-R-E-E-M-A-N, who is now in Alabama in the anesthesia department, and he is actually on our training grant. I am the principal investigator of the training grant, and he is on the faculty, so those are people offhand, but a lot of other grantees were recognizable names.

Q. Now, did you contact any of these grantees and ask them anything about the Council for Tobacco Research?

A. No.

Q. Your funding went until approximately 1994, is that correct?

A. Yes. '95. I think '89 to '92 and then '92 to '95.

Q. Now, at any time from '89 to '92 and then from '92 to '95 did anyone within your group object to receive funding from the Council for Tobacco Research?

A. No.

Q. Prior to 1989 had you ever received funding from the tobacco industry directly?

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A. No.

Q. At any time since 1989 to the present have you received any funding from the tobacco industry?

A. No.

Q. What were the circumstances that led the funding to stop in 1995? I'm sorry. Let me clarify that.

What were the circumstances that led the funding from the Council for Tobacco Research to stop in 1995?

A. We reapplied for renewal of the grant and were denied.

Q. Do you know why you were denied?

A. They didn't -- I do not know why. We were not sent a critique. I have a hypothesis.

Q. What is your hypothesis?

A. My hypothesis is that they thought that the work was, the pilot phase of the work was pretty much done. We had made some important findings, and it would be appropriate for us to

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be funded from other sources like the NIH which we were.

Q. Now, what relationship do you believe your work from 1989 to 1995 has to tobacco and health?

A. That work is clearly related to a couple of the disease processes that are, have been related to tobacco, are related to tobacco. When people consume a lot of cigarettes, there are a number of things that happen. One, with the smoke, comes carbon monoxide. Carbon monoxide ties up -- I don't know how much science background you have.

Q. None.

A. It ties up the hemoglobin, which is the oxygen carrying the red stuff in the blood, so that it can't carry oxygen properly to the body so that it puts the body in the same situation as if you are on the top of Pikes Peak or something or Mount Everest. You become hypoxic, and, therefore, people who are heavy consumers of

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cigarettes around the time that they are doing that are effectively hypoxic, and they have pulmonary vasoconstriction. The blood vessels in the lung get narrow. This puts a strain on the heart, and in extreme cases, the right side of the heart can fail, the right ventricle. It is a situation called cor pulmonale, C-O-R P-U-L-M-O-N-A-L-E.

Also we know that some people who are heavy cigarette consumers over time develop emphysema and other deteriorating conditions of the lung, and in those situations actually the lung cannot exchange oxygen, cannot pick up oxygen and put it in the blood because there's destruction of the small blood vessels in the lung. Those patients get hypoxic, and the pulmonary vasoconstriction makes the situation worse, puts more strain on the heart.

We know that producing hypoxia in an animal sort of mimics that situation, the chronic, the hypoxia that you would get from

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chronic lung disease, the hypoxia that you would get from carbon monoxide in the blood.

Also, we know that cigarette smoking increases the risk of atherosclerosis, coronary disease and heart attacks, and people who have those things may go on to develop heart failure, and people with heart failure also get this pulmonary vasoconstriction or narrowing of the pulmonary vessels, and it has been shown that in that situation endothelin does play a role, and endothelin antagonists, drugs that block the effective endothelium on the target molecule have been shown to be helpful in many heart failure patients that have tobacco use as one of the risk factors for how they got there.

Q. Would you agree that your research had application to the health of smokers?

A. Yes. To the disease -- well, to the diseases I would put it to the pathophysiology of the diseases that relate to smoking.

Q. Was there anything in your research that

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would allow people to smoke with lessened risk?

MS. COHEN: Object as to form. Go ahead.

A. That is a difficult question. I suppose that, and this is hypothetical, some of the things that we found, for example, our work has led industry to have more enthusiasm for developing for clinically these blockers of endothelin, and they are now available in clinical trials for people with pulmonary hypertension, so I suppose technically the use of those new products might help people that had tobacco-related diseases to feel better.

MS. COHEN: David, can I clarify, when you say industry, you are talking about pharmaceutical technology?

A. Biotechnology in the pharmaceutical industry was developing these drugs.

Q. Did your research have any application to nonsmokers?

A. Oh, yes.

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Q. Well, what application did it have to nonsmokers?

A. The same because these disease processes that I have described are much more common in nonsmokers than in smokers. For example, the hypoxic pulmonary vasoconstriction, if you take the purest situation, we put the rat in the box, and it goes like this. Some people that go skiing in high altitudes get severe pulmonary vasoconstriction. People die. I spent time in Bolivia in medical school. We had people get off the plane dead because they couldn't stand the altitude. Perhaps blocking was not -- I don't know whether the people who died had smoking as an additional risk factor or not, but maybe the endothelin blocker could have prevented a phenomena like that.

The application that's being used directly now and is being tested today is actually Columbia, and the University of California, UCSD, is looking at the endothelin

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blocker that has been developed. Actually at Texas Biotechnology, in part by Tommy Brock, a young man who left because I couldn't guarantee his salary, it is being looked at for a disease called primary pulmonary hypertension which is inherited, don't know the genes yet, it is inherited that afflicts young women and is very severe, restricts their activity, is a horrible illness. The only available treatment has to do with actually intracardiac administration of a very expensive drug which, if it is stopped, produces horrible withdrawal symptoms and whatnot, so the endothelin blockers could be a big advance, and that's the first application of the endothelin blockers that has gone the farthest.

They are also being looked at for other conditions like systemic hypertension, the regular hypertension that everybody has or subarachnoid hemorrhage where you get vasospasm if you bleed into the plane and other

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applications like that.

Q. Do you know the name of a doctor at the University of Maryland who studies primary pulmonary hypertension?

A. Yes, and I know him, but I can't remember him. We have been on consulting committees together. I can tell you what he looks like.

Q. That's okay. I know what he looks like, too.

Did anything in your research for -- strike that.

Did anything in the research that you conducted for 1989 and 1994 with Council for Tobacco Research grant-in-aid funding reduce the risk to smokers from smoking cigarettes?

MS. COHEN: Object as to form. Go ahead.

A. Again, that is a very complex question. It would not reduce their risk of developing a disease process in the sense that it

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wouldn't reduce their risk of developing lung cancer. It wouldn't reduce their risk of developing emphysema or chronic pulmonary disease, and it wouldn't reduce their risk of developing atherosclerosis, but it might, developing these therapies, might reduce their symptoms, might be palliative in the developing disease processes.

Q. What does palliative mean?

A. Making symptoms less, making them feel better, perhaps making them live longer, but it wouldn't reduce their risk of developing, getting the disease process started.

Q. It wouldn't cure the disease process either?

A. No.

Q. Louis Rubin, is that the name you know?

A. Yes.

Q. Now, did anything in the research that was funded by the Council for Tobacco Research in

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your research make tobacco products less hazardous to the health of smokers?

MS. COHEN: Object as to form. Go ahead.

A. It might.

Q. Could you explain that.

A. In the sense that if you had a person who used cigarettes and also had some other problems, say they had a lung problem on an independent basis, bronchitis, emphysema which also develops spontaneously and smoking would tend to make that worse, tend to accelerate the process, if you had, for example, an endothelin blocker available and it effectively dilated the pulmonary vessels, helped the lungs work better, then you could say that these people who are at risk because of genetics and also increased risk because of the tobacco use were made better and total risk, risk of not developing a disease, that their risk of dying might be reduced. Their life might be extended by the use of these

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drugs. That is a hypothesis. I don't know whether that would work or not.

Q. Now, prior to 1989 you saw clinical patients in a clinical setting, correct?

A. Yes.

Q. From 1989 to 1994 you saw patients in a clinical setting, correct?

A. Yes.

Q. After 1994 you continued to see patients in a clinical setting, correct?

A. Yes.

Q. As I understand your testimony in previous depositions, and I believe at trial, -- why don't you tell me again what advice, if at all, you give to patients of yours who smoke.

A. We tell them to stop.

Q. Why do you tell them to stop?

A. Because smoking is a hazard to their health.

Q. And you told them to stop prior to 1989, correct?

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A. Yes.

Q. You told them to stop from 1989 to 1994, correct?

A. Yes.

Q. And you continue to tell them to stop even after 1994, correct?

A. Yes.

Q. Did anything in your research that was funded in part by CTR grant-in-aid money lead you to modify the advice you were giving to patients that they should stop smoking?

A. No.

Q. Was it your intention, was one of the purposes of your research to lessen the risk of smokers, to lessen the risk smokers would have from smoking?

A. No. The goal of our research was to delineate the pathophysiology of specifically this process of the pulmonary vasoconstriction.

Q. Was one of the goals of your research to develop a science that would make cigarettes less

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hazardous to their consumers?

MS. COHEN: Object as to form.

A. That was not a goal.

Q. Now, you had to fill out paperwork to get the funding, correct?

A. Yes.

Q. In the paperwork to fill out the funding, did you even mention the word cigarette?

A. I think not.

Q. You do not consider yourself to be an expert in the field of addiction, correct?

A. That is correct.

Q. You do not consider yourself to be an expert in the field of biomedical ethics, correct?

A. That is correct.

Q. You are board certified in internal medicine, correct?

A. Yes.

Q. You are board certified in cardiology,

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correct?

A. Yes.

Q. You testified I believe at the time of the Engle trial that you spent approximately 200 hours in preparing for the various depositions and testimony.

Do you recall that estimate?

A. I think that's correct.

Q. What would your estimate be if you were to include everything and bring it up to today, total hours involved in preparing opinions related to the document that we have marked as Exhibit Number 1, either in this case or in previous cases?

A. I actually went through that exercise recently. I think the Engle estimate was probably low. I think probably the total amount of time spread out over three full years is probably more in the range of 300, 350 hours.

Q. In excess of a hundred hours a year on average?

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A. Yes.

Q. Your salary working at the university during those three years was what?

A. It was about a hundred, as we said before, about 180,000.

Q. This work is generated approximately --

MS. COHEN: Hold on, David.

MR. HOSKINS: It isn't my case. It isn't in my case.

MS. COHEN: You are going to ask the question?

MR. HOSKINS: That is what you guys did with Dr. Sammon.

MS. COHEN: If that is what the representation was with Dr. Sammon.

MR. HOSKINS: I think we have an arrangement that I can't use it in my case.

Q. My understanding, and besides what your lawyer said in your disclosure, is that you make $400 an hour?

A. Now.

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Q. It used to be $300 an hour?

A. Yes.

Q. So if I did the math right, it is about 300 or $400 an hour times approximately a hundred hours a year, correct?

A. Yes.

Q. Approximately 30 to $40,000 supplemental income a year, correct?

A. Yes.

Q. Now, is there a requirement at the University of Alabama that a portion of that be refunded to the University of Alabama?

A. No.

Q. Strike that. That money is yours?

A. Yes.

Q. You don't have to pay the University of Alabama any of it, correct?

A. I share it with the IRS.

Q. Is that the most you have ever received in a non-research consultancy?

MS. COHEN: Object to the form in terms

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of the description of consultancy.

A. Yes.

Q. Other than I understand you have a broad history in getting funding for your research, and then we have what I will call outside consulting is just how I am going to refer to it. We know about the outside consulting for the Council for Tobacco Research and the outside consulting for Campbell Soup Company.

Has there been other outside consulting?

A. Yes.

Q. Who else have you consulted for?

A. Many pharmaceutical companies who are involved in work with developing products for use in high blood pressure and heart failure. Those are the two major ones.

Q. Are you currently consulting with such entities?

A. Yes.

Q. Are you comfortable disclosing the name

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of the entities?

A. Sure. Yes.

Q. Would they be comfortable disclosing it? Here is what I am going to do. I am not sure they would or not, but I am trying to get a flavor for, and let's take 1999. Can you give me a range for your consulting income for these other pharmaceutical entities?

A. I'd have to add it all up. I can't break it down. It's too complicated. I also am on the Board of Directors of Texas Biotechnology.

Q. You get paid for that?

A. Yes. And of a foundation that is interested in cardiovascular research and is advising the Heart Association which is actually funding some major projects through the Heart Association. I am on the Advisory Committee for how that money should be spent.

Q. Those other consultancy arrangements, again does the money go directly to you or does

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some of it go to the university?

A. It goes to me.

Q. Do you know what phen-fen is?

A. Oh, yes.

Q. Are you involved in the phen-fen litigation?

A. No, sir.

Q. Do you know what a malpractice suit is?

A. Yes.

Q. Have you ever been involved in a malpractice litigation?

A. No.

Q. You have never served as an expert on either side of malpractice litigation?

A. No.

Q. You have never been personally involved in malpractice litigation?

A. I have never been, yes. That's a trick question.

MS. COHEN: No. He just phrased it

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badly.

Q. The lawyers in Attorney Cohen's firm, had you ever dealt with any of them prior to your engagement in this litigation?

A. No.

Q. Describe for me, if you would, how it is you came to be retained in this litigation as an expert.

A. Yes, I can do that. Mr. Michaels called me on the telephone approximately three years ago. I think it was in March of 1997 and explained, got through by saying that Harmon McAllister, Dr. McAllister had recommended me to work with them on a project and in fact that the Council for Tobacco Research had been involved as a Defendant in some of these lawsuits against the tobacco companies and that they had been accused of fraud and deceitful representation of their activities and what did I think about that. And I said that's ridiculous, so he said would you be interested in working with us, and I said yes,

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that I would think about it.

Q. Then what happened?

A. I think he called me back and arranged to come to Birmingham to speak with me.

Q. Now, then what happened?

A. He came to Birmingham I think by himself the first time.

Q. What happened next?

A. And we sat in my conference room and talked about the issues, would I be willing to, what did I think on the face of it on the basis of my experience, and then would I be willing to do work to learn more about the organization and would I be willing to testify in court if the case, if it turned out that way.

Q. What were the specific issues that were described to you?

A. At that time the specific issues were not discussed. It was just the general concept of what the problems were.

Q. What happened next?

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A. I thought about it and decided that I would be willing to participate in the, in this activity, and then other representatives -- I was sent written information, I believe the annual reports and some applications. I don't remember exactly. And then I was visited by Ms. Cohen, Bruce Merritt, Mr. Michaels and a fourth lawyer who I don't remember.

Q. Mr. Zirlin?

A. I don't remember.

Q. And what happened then?

A. We talked about the issues, and I raised some questions about how things had evolved, and they presented to me some problem areas where the CTR had been accused of malfeasance. We talked about what the problems were and what the facts are.

Q. The problem areas that were identified to you, what were they?

A. Well, there are a lot of them but actually, on reflection, relatively few

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concerning the long natural history of CTR, problem areas relating to some of the CTR investigators or the CTR investigators being unhappy with the way that they were treated. Specific cases included Dr. Homberger, Freddie Homberger, the MAI investigators, Carol Henry and Dr. Richard Kouri. Is it Richard? The Luechtenbergers, Cecile Luechtenberger, L-U-E-C-H-T-E-N-B-E-R-G-E-R, and her husband was also working with her, and whether the CTR acted properly in the way they were handled with respect to their research and discontinuation of the research.

Q. Now, you didn't mention Dr. Kreisher. Did they ever discuss with you Dr. Kreisher?

A. Yes.

Q. What did they tell you about Dr. Kreisher?

MS. COHEN: Objection as to form. Go ahead.

A. I think -- I don't recall them ever

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mentioning Dr. Kreisher. I recall reading about Dr. Kreisher in the minutes of the Scientific Advisory Board, the SAB.

Q. And what do you recall reading about Dr. Kreisher in the minutes?

A. Dr. Kreisher was a scientific staff member of the CTR who left, and exactly why he left the organization, I don't know.

Q. How about Dr. Abood? Did he tell you about Dr. Abood?

MS. COHEN: Object as to form.

A. I don't recall ever hearing discussed him or problems related.

Q. Who is Ed Jacobs?

A. I think it is Jacob.

Q. Okay. Who is Ed Jacob?

A. I believe Mr. Jacob is or was, I don't know if he is still living, a lawyer working for one of the tobacco companies and also for CTR.

Q. What factual information was provided to you concerning Attorney Jacob?

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MS. COHEN: Object as to form.

A. Again, what was provided to me is a complicated question because in the process of five of these, what we are doing now, --

Q. Depositions.

A. -- depositions, in the trial testimony and reading the depositions and affidavits and actually trial testimony of McAllister and Dr. Glenn and Lisanti, there are references to these people, so provided to me, whether I asked for them or whether they gave them to me, I can't say.

Mr. Jacob, as I recall, was involved in one of the controversies about CTR, and I don't remember the exact circumstances.

Q. What role did Mr. Jacob have with respect to funding of grant-in-aid research by the Scientific Advisory Board of the Council for Tobacco Research?

A. My understanding is that the funding of grants was determined, of the grants-in-aid that

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were overseen by the Scientific Advisory Board was determined by the scientific director on the advice of the Scientific Advisory Board and that, in general terms, the grants were funded with respect to scientific merit and also balance of the portfolio so that everything wasn't in the cancer area or everything wasn't in the cardiovascular area or everything wasn't in the CNS area. It was the scientific director's responsibility to determine that.

Now, the extent of which that was influenced by the companies and by legal representation is what you are asking me?

Q. That's correct.

A. Now that we are dwelling on it longer, I think that the particular instance that you are referring to by trying to make me dredge it out of my memory has to do with funding of nicotine-related research in the brain.

Q. Okay.

A. I believe, and I hope that I am not

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recalling the wrong lawyer, there were a number of these people involved in these processes. If I am recalling the correct incident, there was a time when the companies, the tobacco companies really were not interested in having the CTR support nicotine-related research for whatever the reasons, and apparently they made an effort to discourage CTR from doing so, but the CTR, I believe at that time the scientific director was Sheldon Sommers, Charlie Sommers, and I believe that the CTR protested this and in fact did continue to fund the nicotine-related research. I think the specific research involved was being done at the Karolinska by Dr. Fuxe, F-U-X-E, looking at really the major effects of nicotine on the noradrenalin neurons in the brain. That's my recollection of that particular instance.

Q. Now, have you ever asked anyone whether there were other circumstances where Attorney Jacob or other lawyers influenced research to be funded by this Scientific Advisory Board of the

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Council for Tobacco Research?

MS. COHEN: Object as to form.

MR. BURTON: Object as to form.

A. Asked specifically, no. I relied on my own reading of the minutes of the Scientific Advisory Board.

Q. Do you know what the Internet is?

A. Yes.

Q. Do you use it a lot in your job?

A. A little bit. Not a lot. I rely on my staff to gather information for me.

Q. Are you aware that a large number of tobacco industry documents are available on the Internet?

A. Yes.

Q. Have you ever searched any of those documents?

A. No.

Q. Why not?

A. I have seen many documents provided by Plaintiffs' attorneys, by the Debevoise

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representatives as attachments to various testimony. I have been in a way surfeited with information. The 300, 350 hours is a lot of time.

Q. Now, do you know who Congressman Bliley is?

A. Yes.

Q. Were you aware that as part of the -- I think you were deposed -- let me back up a second.

You were deposed in the Attorney General's action in the State of Texas. Do you remember that, ma'am?

A. Yes.

Q. You will recall that the State of Minnesota also brought litigation against the tobacco industry, correct?

A. Yes.

Q. In fact, that case went to trial, correct?

A. Yes.

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Q. It ended in a settlement prior to the conclusion of the trial.

Are you aware of that, correct, ma'am?

A. Yes.

Q. And you are also aware that as part of that litigation, a large number of documents were placed on the Internet, correct?

MS. COHEN: Objection as to form.

A. Yes.

Q. And you were aware that or are you aware that those documents included documents for which the tobacco companies had asserted the attorney/client privilege?

A. Yes. I am aware of that.

Q. In fact, that after several proceedings, 39,000, there about, documents were placed on the Internet by the House of Representatives, correct, ma'am?

MS. COHEN: Object as to form.

A. I am aware that a large number of documents are on the Internet. I am not aware of

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exactly when they went up there and what the circumstances were, whether it was related. I understand that they were in some way related to the Minnesota case, but I don't know.

Q. Did you ever ask anyone whether any of those documents related to the issue of attorney interference with the independence of the Scientific Advisory Board of the Council for Tobacco Research?

MS. COHEN: Object as to form.

A. Could you restate the question.

Q. Did you ever ask anyone whether any of the documents on the Internet related to the issue of attorney interference with the independence of the Scientific Advisory Board of the Council for Tobacco Research?

A. I did not ask that question, no.

Q. And is it fair to say you have not attempted to investigate that issue on your own by using your access to the Internet to read any of these documents to the extent that they exist,

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correct, ma'am?

MS. COHEN: Object as to form.

A. That is correct.

Q. Have you been asked not to conduct any independent research on the issue of attorney interference with the Council for Tobacco Research?

MR. BURTON: Object to form.

MS. COHEN: Objection.

A. No, I have not been asked to desist from any sort of investigation.

Q. Do you intend to conduct any investigation prior to the trial of these cases?

MS. COHEN: Object as to form.

A. I believe that I have an adequate body of information to deal with the areas in which I am supposed to be an expert.

Q. If you could look at page 37 of Exhibit Number 1. Actually, it is page 2, paragraph 4.

Is this a complete statement of each of the opinions you will be giving in this case?

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A. You mean the whole document?

Q. Yes. I think if you look at 4, paragraph 4 on page 1, then you have the bullet points that begin on page 2 and page 3. I would just like you to state for the record that that is the entirety of the specific opinions that you are going to be rendering in this case.

A. You mean all of these -- okay. The question? What is the question?

Q. If you look at page 1, number 4, it talks about subject matter of expected testimony. I think in your previous depositions the lawyers have read all these bullet points into the record and asked you to describe them. All I want you to do is review the bullet points and just confirm for me that those still are your opinions and that you have no other additional opinions than those, or if you do, tell me.

I'm going to step outside while you read that, so just take your time.

A. Okay.

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(Pause.)

Q. Ma'am, you have had a chance to look through the document?

A. Yes.

Q. Do you remember the question I asked you?

A. Yes.

Q. Can I have an answer, please?

A. Yes.

Q. So this is the extent of the opinions you will be --

MS. COHEN: No. Your question was can I have an answer.

Q. What is the answer?

A. This is the -- my expert testimony will be based on these opinions.

Q. Based on the investigation you conducted as an expert, have you identified any circumstance where there was inappropriate interference with the independence of the Scientific Advisory Board for the Council for

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Tobacco Research?

MS. COHEN: Object as to form.

A. From my investigations, my reading, my asking of questions and having additional information, provided some original documents, no. I think that the Scientific Advisory Board has been adequately independent.

Q. And what do you mean when you said "adequately independent"?

A. That by and large, it has had total freedom, and the scientific director and the SAB members have had freedom in determining the directions that the research will take; in other words, what general areas are to be supported and what specific grants will be funded or are funded.

Q. Do you believe it is important for an entity like the Scientific Advisory Board to have such independence?

A. Yes.

Q. Why?

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A. Because in order for research to move forward, in order for the body of knowledge to move forward, it's necessary to be able to change directions, to be able to keep up with the science that is going on in the universe. It's necessary to on earth, but in the universe, in other areas of biology and even physics and chemistry also, and it is necessary essentially be able to think out of the box because now we talked about how cancer and the heart people were at war with one another, but in fact, now we know a lot of these genetic mechanisms that might predispose to lung cancer might also have to do with damage to blood vessels and atherosclerosis and similar genes might be involved, similar toxicities might be involved.

Q. Is it appropriate for an industry to try to stop independent research that may be adverse to its financial interest?

MS. COHEN: Object as to form.

A. That is a hypothetical question. Clearly

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if by stopping you mean in some forcible way preventing bio laboratories or something, preventing scientists from doing work, clearly that is not proper. It is illegal. If you mean not encouraging work to go in a certain direction by providing, not providing funding for it, then the area becomes more gray.

Q. Now, did you understand that SAB, Scientific Advisory Board at any time in its existence was being influenced by the industry not to research certain areas or to stop researching in areas where research had begun?

MS. COHEN: Object as to form.

A. The instance that you brought up before with Mr. Jacob, my understanding from my reading of the Scientific Advisory Board minutes and then some proceedings of other meetings and a letter written by Dr. Sommers to somebody, maybe to Jacob or somebody else from the industry, indicate to me anyway that at one point the industry or some component of the industry wanted

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to discourage CTR, or the Scientific Advisory Board, from funding research relating to nicotine and the brain, noradrenalin neurons.

My understanding was the CTR continued to support the research, however, and actually supported new research projects, and there is evidence of that in the minutes of the Scientific Advisory Board and also in the annual reports that this research was continued and actually new research was initiated.

Q. So your understanding of the facts was that there was no effective industry interference with the independence of the Scientific Advisory Board? Is that your understanding of the facts?

MS. COHEN: Object as to form.

A. That is correct. I have not seen evidence where influence from the industry in the person of whatever, any representative, caused the Scientific Advisory Board to change directions or not fund an area of research or not fund a particular investigator.

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Q. Would your opinions that you have offered in this case be different if you were shown evidence where influence from the industry caused the Scientific Advisory Board to change directions or not fund an area of research or not fund a particular investigator?

MS. COHEN: Object as to form.

A. Well, I have reviewed over 350 hours, 45 years of materials, output of the TIRC and the CTR research grants-in-aid and also other things with special projects and the proceedings of the Scientific Advisory Board, and even if, this is hypothetical, if you could show me one case where someone from the industry shut off the line of research or shut off an investigator, I don't think that that would change my overall opinion of the CTR, no.

Q. Are you prepared to offer any opinions that this never occurred, that there never was industry interference with the Scientific Advisory Board?

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MS. COHEN: Objection to form.

A. In science we are always taught to say never say never. I am not aware, and I have looked at a lot of materials, I am not aware of any instance where this effectively happened.

Q. Now, as someone who has spent your entire career in research in the medical field, do you think the public interest is served when industry influences funding sources to change direction or not fund areas of research or not fund a particular investigator?

MS. COHEN: Object to form.

A. That is a very complicated question. The public interest is something that's fairly broadly defined. Could you restate the question? It is so complicated.

Q. As someone who has spent your entire career in research in the medical field, do you think the public interest is served in circumstances where an industry influences funding sources to change the direction of

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research, not fund areas of research or not fund particular investigators?

MS. COHEN: Object as to form.

A. That's a very broad question. To some extent industry, since -- if -- to the extent that the industry is actually paying for the research that is being carried out, it is sensible that the industry may wish to see work that's done, see work done that will be of some direct or indirect benefit to it. That seems sensible to me. The purpose -- well, we can get into the Frank Statement or whatnot, but --

Q. But do you believe that if in that circumstance where an industry says it is going to fund research for its own purposes, is that independent research, ma'am?

MS. COHEN: Object as to form.

A. Well, we might as well move into the stated purpose of the CTR was to examine issues related to smoking and health. That was defined as the purpose of the industry for getting into

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this issue to begin with.

Q. Well, was this to be industry-directed research or was it to be independent research, according to the Frank Statement?

MS. COHEN: Object as to form.

A. According to the Frank Statement, it was to be independent research.

Q. And is it independent research if an industry directs or attempts to interfere with the research that is being conducted pursuant to the program?

MS. COHEN: Object as to form.

A. These are, again, relative terms and somewhat gray areas. The research that was conducted under the supervision of the Scientific Advisory Board, was under the peer review by the Scientific Advisory Board was, in my opinion, very largely independent, was investigator initiated, was rigorously peer reviewed, published in good journals, done by honest, reputable people in good places. Even Johns

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Hopkins. And to me that qualifies for independence.

If there were some instances in the course of a 45-year history where an effort was made by industry to push something forward or pull something back, that would represent perhaps a blemish on the long track record, but that would not cause me to change my opinion of this entire, very complex and distinguished operation.

Q. You would agree, though, that those blemishes are inconsistent with the stated purpose of the CTR and its predecessor, correct?

MS. COHEN: Object as to form.

MR. MONICA: I am going to object to "blemishes". I object as to vagueness, confusing.

A. The objection was hypothetical?

MS. COHEN: No. He's on our side.

Q. Go ahead, ma'am.

A. Could we --

Q. Ma'am, your previous answer was that if

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there are some instances in the course of the 45-year history where an effort was made by industry to push something forward or pull something back, that would represent perhaps a blemish.

A. Blemish.

Q. And my question was would you agree with me that these so-called blemishes are inconsistent with the stated purpose of the CTR and its predecessor organization?

MS. COHEN: Object as to form.

A. They are not exactly inconsistent, no.

Q. And why not?

A. Because they may have -- and again, we are talking about a hypothetical situation. They may reflect discordance between say a set of priorities on the part of the Scientific Advisory Board or the scientific director and some other parties. The redirection -- again, this is hypothetical -- may not have caused the activities of the funded parties to stray from

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the issue of tobacco and health, but it is simply a procedural matter. One would like to see absolutely pristine, no external influences at all, the SAB sitting here, getting information from the best of the scientific community and then distributing money to the scientific community.

Q. What if the reason for the interference by the industry was a perception by its lawyers that research had the potential of putting the tobacco industry out of business overnight?

MS. COHEN: Object as to form.

Q. Is that the type of interference that you think is appropriate by an industry hypothetically?

A. Could you state the question?

Q. I am kind of asking you another hypothetical.

What if the reason for the interference by the industry was that certain lawyers had determined that the research had the potential of

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putting the tobacco industry out of business overnight?

MS. COHEN: Objection.

Q. Would you agree with me that that type of interference is inconsistent with an independent research body?

MS. COHEN: Object as to form.

A. Again, it is a hard question to answer. The motivation behind a particular direction might be different from the particular direction that's taken or requested.

Q. What do you mean by that, the motivation might be different?

A. Well, there might be concern, again, hypothetical, on the part of the individuals who had a point of view, but the course of action that is suggested might not necessarily interfere with the natural progression of the science.

Q. Hypothetically if an industry, if the tobacco industry thought that research might lead to the development of something that would

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substitute for nicotine in the cigarette and hypothetically if they understood that that would mean that the cigarettes would not be addictive and hypothetically based on that assumption they decided to stop certain research, is that consistent with the charter of the CTR, as you understood it, in 1954?

MS. COHEN: Object as to form.

A. Well, first of all, my understanding is that by statute or by understanding, the CTR research was proscribed, prevented from doing anything that had to do specifically with product development. Because CTR was sponsored by all of the tobacco companies, in my understanding, it was that would be sort of an antitrust violation, that that was completely out of the side of the bailiwick of the CTR activities.

Q. Well, I guess I am trying to figure out as a doctor, do you believe it would be a good thing if whatever it is in cigarettes that make people smoke could be removed?

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MS. COHEN: Objection to form.

A. It would be a good thing. As a doctor, it would be a good thing if people didn't smoke.

Q. Right. And if there was a way to make people not smoke, would that be a good thing?

MS. COHEN: Object as to form again.

A. Yes.

Q. And do you think that if people were trying to research ways to remove any motivational impact of smoking, that they should be interfered with by the tobacco industry?

MS. COHEN: Object as to form.

A. That's hypothetical.

Q. Okay.

A. I guess again, I would have to ask you are you talking about whether, are you talking about interference with any kind of investigation or a requirement that the industry investigate itself these areas?

Q. I am talking about the first I think, interfering with so-called independent research.

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MS. COHEN: Again, object as to form.

A. Could you restate the question one more time.

Q. Do you think that if researchers were trying to find ways to remove whatever it is in a cigarette that causes people to smoke, that they should be interfered with by the tobacco industry?

MS. COHEN: Object as to form.

A. Again, that is a very open-ended question. Are we talking about CTR-funded research? Are we talking about any research anywhere?

Q. Let's start with any research anywhere.

Is it appropriate for an industry to try to prevent independent research just because it has a financial interest to do so?

MS. COHEN: Object as to form.

A. Independent research funded by say the Government?

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Q. Yes, ma'am.

A. Then no. That would be an interference with the scientist's freedom. They should be able to research anything they want to if you can get support for it.

Q. Now, let's add how about is it appropriate for the industry to interfere with the SAB funding if it determines that research is heading in a direction that is not consistent with its financial goals?

MS. COHEN: Object as to form.

A. Yes. We would hope that that would not happen.

Q. And would any of your opinions change if you were shown evidence that that in fact did happen?

MS. COHEN: Object as to form.

A. Again, as I said before, if you could show that that happened in a specific instance, still my view of the overall operation of the CTR over all this 45-year period of time would not

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change. I would have a very high opinion.

Q. But you would not have a high opinion with respect to the specific instance, correct?

A. That's a hypothetical.

Q. Correct.

A. If you could show me that. Yes.

Q. The fact that an organization has a very good track record doesn't in any way excuse a situation where it inappropriately, where the industry inappropriately interfered with independent investigation; would you agree with that?

MS. COHEN: Object as to form.

A. Well, I would just like to make a broad statement that in all cases where there is a funding mechanism and a sponsor organization, even if it is a not-for-profit, there may be cases where funding policy is based on considerations having to do with the well-being of the organization that may in the short term not promote the advancement of the research in an

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optimal way. I can give you an example.

Q. What is your example?

A. When I was with the Heart Association, when I was president and when I was on the Board, we considered the funding of human fetal tissue research which was a very difficult issue for the National Institutes of Health even at that time, but they had come through saying that they would do it. The Heart Association was under pressure by the catholic church, and a lot of money is raised in schools, and it decided not to fund human fetal tissue research even though many of our advisers, the pediatric cardiologists were saying it was very important to do this kind of work because it was reaching the level of maturity where fetuses could be helped by actually operating intrauterine because there would be a major loss of funds if the research were continued.

MS. COHEN: David, I'm sorry. Are you done, Dr. Oparil? Were you done with that

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answer?

THE WITNESS: Yes.

MS. COHEN: I don't want to interrupt. When you get a chance, I need a break.

MR. HOSKINS: Let me just ask a couple more questions.

MS. COHEN: Sure. When you find a convenient place.

Q. Let me just go back to my last question, make sure I understand.

Are you in any way trying to suggest that an organization's track record, excellent track record excuses any lapse of independence in that organization's funding decisions?

MS. COHEN: Object as to form.

A. Let me say that the concept of total independence with respect to funding of any organization, whether it is the Heart Association, whether it is even the National Institutes of Health, are they totally independent of the Congress? You know, they are

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our highest form, of most powerful and most respected probably form of biomedical research funding. Not total.

Q. But are they independent of the industry?

MS. COHEN: Object as to form.

Q. Of industry?

MS. COHEN: Still object as to form.

A. I can't say.

MR. HOSKINS: Let's go ahead and take a break.

(Research taken -- 11:57 p.m.)

(After recess -- 12:04 p.m.)

BY MR. HOSKINS:

Q. Did you know Dr. Sommers? Do you know?

A. Yes.

Q. Did you deal with Dr. Sommers when you were receiving grant-in-aid funding?

A. No.

Q. Did you know Dr. Gardner?

A. No.

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Q. Did you ever meet Dr. Gardner?
A. I think not.
Q. Addison Yeaman?
A. No.
Q. Janet Brown?
A. No.
Q. Alexander Holtzman?
A. No.
Q. Now, you mentioned that you read minutes of Scientific Advisory Board meetings. Did you read the minutes of the Committee of Counsel meetings?
A. No.
Q. Do you even know what the Committee of Counsel is?
A. I believe that the Committee of Counsel is a committee of lawyers from the tobacco companies.
Q. And did you ever ask to see -- did you know they kept minutes of their meetings?
MS. COHEN: Object as to form. Go

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ahead.

A. I believe that I have seen some documentation in writing of their meetings, --

Q. Are --

A. -- of a meeting.

Q. Is this documentation included in your reliance material?

A. I am not sure.

Q. What meeting was described in the minutes that you saw?

A. I don't even know.

MR. BURTON: Object to form.

A. But I remember having seen the minutes of some meeting relating to one of these issues.

Q. When did you review that document?

A. I don't recall.

Q. Did you review it in preparation for your testimony as an expert in any of these cases?

A. Yeah. I think it was shown to me, yes.

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Q. And this document formed part of the factual basis supporting your opinions? Fair statement?

A. Yes, in the sense it didn't controvert my opinion.

MR. HOSKINS: Attorney Cohen, do you know what she is talking about?

MS. COHEN: I believe, I am not sure exactly what she is talking about, but I am fairly certain that it would have been something that would be attached to, either it was included in the reliance materials or attached to one of the affidavits. It was included in the reliance materials or was shown to her in a deposition or at the Engle trial. You would have all of that stuff.

MR. HOSKINS: Okay.

Q. Is that your understanding, ma'am, that it wasn't shown to you independent of your reliance materials or independent of a deposition?

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A. That's correct.

Q. Do you know what methylcholanthrene is?

A. Yes, but then you are going to ask me to explain it. Yes. In very general terms.

Q. What role, if any, did methylcholanthrene have in the MAI investigation?

A. I can't tell you. I don't know. I don't recall.

Q. Now, you studied the names of the various people who were part of the Scientific Advisory Board, correct?

A. Yes.

Q. Did you ever contact any member of the Scientific Advisory Board as part of your investigation?

A. No.

Q. Do you know who Dr. Craighead is?

A. Vaguely. I cannot identify him.

Q. Was he on the Scientific Advisory Board?

A. Yes.

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Q. Now, do you know why Dr. Craighead resigned from the Scientific Advisory Board?

A. The accounting in the minutes I recall stated that he essentially was too busy to come to the meetings.

Q. Did you conduct any investigation to determine whether there were any other reasons why people, why Scientific Advisory Board members resigned?

A. No.

Q. Do you know what fractionation is?

A. In general terms, yes.

Q. How about with respect to tobacco smoke?

A. In general terms, yes.

Q. Would your opinions be changed if, would any of your opinions change if you were shown evidence that members of the Scientific Advisory Board resigned out of concern of improper industry interference?

MS. COHEN: Object as to form.

A. Could you repeat the question.

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Q. Would any of your opinions change if you were shown evidence that members of the Scientific Advisory Board resigned their positions out of concern of improper industry interference with their independence?

MS. COHEN: Object as to form again.

A. Well, I know from reading all of those minutes that only I believe two Scientific Advisory Board members ever resigned. One was Craighead. The other I think was Dr. Kotin who moved from California to the National Cancer Institute and also was very busy with other things. I believe he resigned so that even if one member from this very large board resigned because of some concerns that he had, they were all mad that he had, it wouldn't influence my opinion of the total operation, no. And I have no evidence that that happened.

Q. Have you ever asked anyone assisting you in this to determine whether or not any of the Scientific Advisory Board members had resigned

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out of concern over industry interference?

A. No.

Q. Have you ever asked anyone assisting you to determine whether or not there were ever any criticisms by the members of the Scientific Advisory Board of their independence?

MS. COHEN: Object as to form.

A. No.

Q. Do you know what AHH is?

A. Yes.

Q. Okay. What is it?

A. It is an enzyme. It is aryl something hydrocarbon hydroxylase, and it converts -- I am getting into deep water. It converts one of the components of cigarette smoke into another compound which can test the DNA.

Q. What is your understanding, if any, with respect to what role this may play in the link between smoking and lung cancer?

A. My understanding is that some people believe, and I don't know if it is consensus

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among all cancer experts or the majority of cancer experts, but that this may be a pathway of carcinogenesis that attaching onto DNA may cause the DNA to fall apart, and that process, there is cell destruction and cancer may get started.

Q. What evidence do you have of industry interference with research relating to this phenomenon dealing with AHH?

MS. COHEN: Object as to form.

A. I have no information that the industry interfered with this research.

Q. We talked shortly before about methylcholanthrene. What information do you have with respect to industry interference relating to research involving methylcholanthrene as part of smoke inhalation programs?

MS. COHEN: Object as to form.

A. None.

Q. Do you know what it means to be a nicotine blocker?

A. Yes.

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Q. What does it mean?

A. There are nicotine cholinergic receptors on cells, and nicotine binds them. Nicotine is a plant alkaloid that has a lot of effect on nerves, and these receptors are on the ganglia, on the periphery like the places where nerves come out of the spinal cord and gather onto the spinal cord and also are receptors on the brain, and I believe they are substances that can block. A blocker is something like our endothelin blocker, another compound that can attach to the receptor and prevent nicotine from getting on there, to prevent it from acting from having a biological effect.

Q. You are working on a blocker right now, right?

A. Yes. We work with it.

Q. The blocker you are working on, what ability does that have? What's the effect of all this research going to be when it pans out?

A. In our experimental animals, our

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blocker, which is a selective blocker of one of the endothelin receptors, if you give the blocker either by mouth or by vein to a rat and put the rat in a low oxygen chamber, hypoxic chamber, it prevents the pulmonary pressure from going up. It prevents the pulmonary hypoxic response. It is being used -- are you sure Lou Rubin hasn't moved to [DELETED]

Q. He has moved to [DELETED]

A. He is the one in [DELETED]

Q. All right. He used to live in Maryland.

A. Yes, sir. It is being used by --

Q. He is one of my experts.

A. It is being used in a group in Columbia with physicians and surgeons, my alma mater, and also by I think Dr. Rubin's group in San Diego to treat patients with primary pulmonary hypertension, and I understand that the preliminary results are encouraging, but that is indirect evidence through the company, so it might not be true.

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Q. A nicotine blocker, how would that work?

A. A nicotine blocker would prevent nicotine doing from whatever nicotine does.

Q. Now, what information do you have that the industry interfered with research into the development of nicotine blockers?

MS. COHEN: Object as to form.

A. None.

Q. You mentioned Dr. Fuxe, F-U-X-E. Did you know or do you know this physician?

A. I know his reputation very well. One of the scientists in our neurology department worked with him. I have done a lot of work with hypertension, particularly sensitive hypertension, and Fuxe, Dahlstrom, his associate, Dr. Dahlstrom, D-A-H-L-S-T-R-O-M, and he delineated the pathways of noradrenergic nerves. Noradrenalin is in the brain as well as the adrenal gland, and they define the pathways in the brain, and we have done work trying to interfere with these pathways and prevent certain

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forms of hypertension, solve sensitive hypertension, so I am familiar with his work. I have never met him.

Q. Did you contact Dr. Fuxe to discuss the issue that was raised in Dr. Sommers' letter?

A. No.

Q. The Fuxe application, you know what I am referring to, ma'am?

A. Yes, I know what you are referring to.

Q. Do you know Dr. Abood, A-B-O-U-D?

MR. MICHAELS: Object to form.

MS. COHEN: Object to the form. I think it was misspelled.

A. I think it has two O's. No, I do not know him.

MR. HOSKINS: Did you type this, Ms. Cohen? I know you are known for your typos.

Q. Is that a man or a woman?

A. I think it is a man.

Q. Did you discuss, did you have any discussions with Dr. Abood about the nicotine

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central nervous system research he was conducting on behalf of CTR?

A. No.

Q. Did you know Dr. Abood was the principal grantee in the area of nicotine central nervous system research in 1977 through 1979?

A. No, I don't recall that specifically. I remember seeing his name in there a lot, so I think that he was either funded by or turned down by them a lot.

Q. Do you know who Dr. Ford was? He was a CTR scientific staff member.

A. I know who he -- I think he is still alive.

Q. Yes.

A. Yes.

Q. Did you have any discussions with Dr. Ford about the SAB funding process?

A. Not specifically, but I believe that I have met Dr. Ford. I was fortunate enough to be at a meeting of the SAB, was invited to present

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our results after the studies were done. This could be in probably January of 1997.

Q. Now, you understood that the SAB received its funding from the tobacco industry, correct?

A. Yes.

MS. COHEN: Object as to form. Go on.

Q. What percentage?

A. The member companies.

Q. The member companies?

A. Yes.

Q. I think it is 97.7 funding came from all the funding of tobacco companies themselves?

A. I thought it was a hundred percent. Yes.

Q. Did you ever learn of a circumstance or a time when the industry was threatening not to fund SAB's budget?

MS. COHEN: Object as to form.

A. I do not recall any such instance.

Q. Since you don't recall the instance, you can't give me any facts about why the industry

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would have been deciding not to fund it, correct?

MS. COHEN: Object as to form.

A. I recall no such instance.

Q. To the best of your knowledge, there was no threat to funding of the SAB by the individual tobacco companies, correct?

MS. COHEN: Object as to form.

A. That is correct. I am aware of many criticisms of the SAB that were made by various people working for various tobacco companies, but I have never read of or heard of a threat not to fund or support or dismantle or anything.

Q. If you learned that there was a threat to fund or a threat to dismantle, would that impact any of your opinions in this case?

A. No, because it never happened.

Q. But if you learned hypothetically that there was a threat that unless certain things changed there would be no funding, would that change any of your opinions in this case?

MS. COHEN: Object as to form.

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A. No.

Q. You don't believe that if an industry threatened the SAB out of existence that that would have some impact on the SAB's independence?

MS. COHEN: Object as to form. Go ahead.

A. You are creating a hypothetical, aren't you? A priori, no. I don't agree with what you said.

Q. Why not?

A. Because if we take it down to your hypothetical, which was a hypothetical, my response comes from reading a lot of these materials that were held in front of me by Plaintiffs' attorneys and in the affidavits, attached to the affidavits and attached to the testimony, so there were many persons in the industry, scientists who worked for the companies who appeared to have been sort of crotchety old men from my reading and lawyers who worked for

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the industry who didn't like just about everything about the SAB. Some of them thought that the SAB was getting into very geeky, very abstract kind of research that they didn't think had anything to do with their business. Others thought that the SAB was doing work that was too close to their business and should be doing more abstract things related to the health of the nation and all that so that the criticisms were contradictory, and clearly these are huge companies, and I don't know if one doctor so-and-so said something. I don't know what the other people in his company, what the other companies were saying, if there were threats, how far the threats ever went, so I can't say that just because the SAB, in your hypothetical, that the SAB managed to survive threats because it changed the way of its business or whether the other people in the companies straightened out these complainers because they realized the value of the SAB.

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Q. Well, do you think just in a general proposition if a funding organization has its ability, it has its funding source threatened, do you think that affects its independence or not?

MS. COHEN: Object as to form.

A. Not a priori, no.

Q. Can you think of any circumstance where that would affect? How about in any circumstance?

A. Again, it is a hypothetical.

Q. Well, for example, when you talked about the fetal tissue research, did you think that the American or Heart Association's independence was being interfered with because of the political ramifications relating to fetal tissue research?

A. I think it was a blemish in the sense that some scientists who applied for grants couldn't do what they wanted or didn't have the option of working in that area because of that proscription. In fact, when we did the research, there was only one grant on human fetal tissue

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research that actually came from the State of Pennsylvania, from Philadelphia someplace, and so they lost their funding or were never granted their funding so that the practical ramifications of this were small.

Q. But when it was a blemish, meaning it was a blemish on its independence, correct?

MS. COHEN: Object as to form.

A. I think that, yeah, it was a deviation from the concept that research ideas should be free-flowing, should originate from the investigators, and anything that seems worth looking at should be supported within the extent of availability.

Q. Now, you testified previously that the documents you reviewed were selected for you by the attorneys representing the Council for Tobacco Research?

MS. COHEN: Object as to form. What prior testimony? Are you talking about today?

MR. HOSKINS: No.

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Q. In these various depositions people have asked you who selected the documents that are your reliance materials.

Do you recall what your answer was?

A. No.

Q. Well, I believe you said that these documents were provided to you by lawyers representing the Council for Tobacco Research.

Does that refresh your recollection?

MS. COHEN: Object.

THE WITNESS: Can I answer?

MS. COHEN: Yes.

A. They were provided in a sense that I didn't send, I didn't take the time and resources of my staff people to go to the library, go to the Internet, but I asked for many of these documents.

Q. Which documents do you recall, what type of documents did you recall asking for?

A. I think I asked for the Surgeon General's reports. Perhaps they provided the

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Surgeon General's reports. I asked for some of the papers that had been cited in the Surgeon General's reports.

Q. And they provided you with the annual reports?

A. Right.

Q. You didn't ask for those specifically?

A. No. They came. That was the first box.

Q. And then you asked I believe for various studies that were discussed in those annual reports, correct?

A. Yes.

Q. Like the blue book on MAI, correct?

A. No. I think the blue book was brought by Mr. Merritt who seemed very interested in that.

Q. Well, did you ask specifically to review all of the Homberger papers or were they brought to you?

A. I asked to see them.

Q. Now, --

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A. And the Luechtenberger paper that deals with the investigators that had raised complaints, so the Luechtenbergers and Homberger and the MAI, Henry Kouri.

Q. Now, did you ask to see industry documents on the issue of industry control of this Scientific Advisory Board?

MS. COHEN: Object as to form.

A. No.

Q. Did you ask -- well, you are familiar basically with the allegations against CTR in the Engle case, ma'am?

A. Yes.

Q. We started the deposition by going over the verdict form, and you understand what the outcome of that litigation was?

A. Yes.

Q. Did you ever ask the attorneys who represented Council for Tobacco Research whether or not there were any documents that supported the jury's verdict in that case?

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MS. COHEN: Object to form.

A. No, because I assumed that having seen the attachments to the testimony, testimony, affidavits of McAllister and Glenn and Lisanti that I knew a lot of the material that had been provided, and also having read the trial testimony of some of the Plaintiffs' witnesses, I had a general idea.

Q. You didn't ask for any more documents on that issue from your counsel?

A. No.

Q. After the Engle trial and up to today have there been any other depositions?

A. Ohio Ironworkers.

Q. Ohio Ironworkers came after Engle?

MS. COHEN: That came after the Engle deposition.

Q. I am talking about after the Engle trial.

A. No.

Q. That was the last thing you have done

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except for this deposition?

A. No, no.

MS. COHEN: Yes. Yes. Yes. Your Engle testimony was the last thing you have done since, yes.

Q. The Engle testimony in trial was the last?

A. Yes.

Q. What did you do specifically to prepare for my grueling three hours of questioning today?

A. I reviewed the minutes of the SAB. I reviewed some of my previous testimony.

Q. Were you shown certain portions of your testimony by someone?

A. No.

Q. Did you select the portions you wanted to review?

A. I just read it.

Q. Someone didn't say hey, look, I would like you to review these five pages of your

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testimony?

A. No.

Q. How much time did you spend preparing for the deposition today?

A. Do I have to tell you in front of them?

Q. Yes.

A. Most of the day yesterday, and most of the day Monday, most of the day yesterday, although it was broken up by things, so part of two working days and then about maybe four or five additional hours previously.

Q. Did you review, other than your prior testimony, other than the minutes of the SAB, did you review any of the documents to prepare for your testimony today?

A. I am trying to remember what we did. No. Mostly we discussed the issues.

Q. Have you reviewed any of the pleadings prepared by Plaintiffs in either the National Asbestos Workers case or the Blue Cross and Blue

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Shield case?

A. Could you define what a pleading is.

Q. Like the complaint, the legal documents that set forth the allegations.

A. No. No. I don't think so.

MS. COHEN: Hold on one second. If you want me to answer, I believe we have gone through, we went through these with her, but this deposition had originally been scheduled, we had offered a date earlier, so we may have gone through some of that stuff months ago, but I don't remember. Obviously the Doctor doesn't either.

Q. In previous depositions you agreed that your publications basically fall within the area of hypertension, vascular biology and other cardiovascular areas.

Would that still be your testimony today?

A. Yes. Cardiovascular including pulmonary vasculature.

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Q. Have any of your publications involved studies where animals were exposed to tobacco smoke?

A. No.

Q. Have any of your articles and refereed journals even mentioned the word "tobacco"?

A. In refereed journals, yes.

Q. Well, the AHA, the one where you talked about smoking?

A. Presidential address.

Q. What other ones?

A. Recently I was a co-author on a position statement on preventive cardiology, cardiovascular disease in women. This was the AHA guidelines for prevention of heart disease in women. The first author was Lori Mosca, M-O-S-C-A, and that talks about smoking cessation and prevention as a health measure.

Q. Is that listed on your CV, ma'am?

A. Yes.

Q. Could you just give me the number,

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please.

A. 383.

Q. 383. You add to the bottom, I take it, ma'am?

A. I'm sorry?

Q. You just add new publications to the bottom?

A. Yes.

Q. So it is publication number 383?

A. Yes.

Q. I'm sorry. Phenotype Characterization of Transgenic Mice?

A. No. You are looking at the abstracts. The full papers are first. These pages aren't numbered because you couldn't keep adding.

Q. I see. It is Mosca?

A. Yes. Mosca, Judelson, King.

Q. A Guide to Preventive Cardiology for Women?

A. Yes.

Q. Any other ones that deal with tobacco?

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A. I think not. No.

Q. Would you agree that you haven't had any direct experience working for a research grant-funding organization?

MS. COHEN: Object as to form.

A. No. I think I disagree.

Q. What experience would you have working for a research grant-funding organization?

A. In the advisory capacity, for example, I chaired the committee of the Institute of Medicine that looked at breast cancer research to be funded by the Department of Defense, so to that extent I was working for the DOD because they, the DOD, funded by contract the IOM study.

I work for the NIH when I am on a study section, actually chair the study section on training for heart, lung and blood. I have served on a committee called the Boundaries Committee of CSR, Center for Scientific Research, of the NIH, and our mandate is to try to reorganize how the peer review is at the NIH to

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make it more fair and accommodate modern review procedures. I am consultant in this foundation that is disbursing funds to a couple of centers in cardiovascular research, and we meet regularly.

Q. You never were a member of the Scientific Advisory Board of CTR, correct?

A. No.

Q. Have you ever been a member of a similar board like a Scientific Advisory Board?

MS. COHEN: Object as to form.

A. Research, yes. When I was involved in the Alabama affiliate of American Heart, I was on the Research Policy Advisory Committee which the lower level committee, like the study sections, decided the priority of funding, but the higher committee decided on exactly what we would fund, what the cutoff was, what was relevant and so on.

Q. Now, were you ever informed that other potential witnesses had been approached to

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testify on the topics that you are testifying on but had refused to accept the assignment?

MS. COHEN: Object as to form.

A. I am aware of one individual who declined to accept or carry through with the assignment because he had been made chair of his department and there was a problem with the availability of time.

Q. And what was that person's name?

A. His name, he is a pathologist at Duke, and I don't recall his name offhand. This was early on.

Q. Was he the first choice? Explain to me what you understood about his role.

A. That he started to become involved in the process reviewing the literature and so on. Pizzo, P-I-Z-Z-O.

Q. Okay.

A. And that he declined to go farther, I was told, because he had become appointed chairman of this department and there was a time

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availability.

Q. Did you talk to Dr. Pizzo specifically?

A. No.

Q. What you understand about his willingness to go forward was told to you by somebody other than Dr. Pizzo?

A. It was told to me by Bruce Merritt.

Q. Anyone else similar to Dr. Pizzo?

MS. COHEN: Object to form.

A. I am aware of no other person.

Q. Have you ever indicated any unwillingness to continue to express the opinions you have expressed in the past in this matter?

A. No.

Q. For example, have you said this is the last case I am doing; you will have to get somebody else?

A. No.

MR. HOSKINS: I pass the witness.

EXAMINATION BY MR. CARBERRY:

Q. Good afternoon.

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MR. CARBERRY: Does anybody need a break before we start?

MS. COHEN: I think I am fine. Do you have a sense, of point of how long you will be?

MR. CARBERRY: Maybe half hour, 45 minutes.

Q. Good afternoon, Dr. Oparil. My name is Paul Carberry, and we represent the Plaintiffs in the Blue Cross case. I know you have been deposed a lot and you have offered testimony often. I want to say at the outset if you don't understand any of my questions or if you have trouble hearing me or anything, please just let me know. I just have some brief questions about some of your earlier testimony today and some other things that I wanted to ask you about.

First of all, you talked about CTR's grant-in-aid program earlier today?

A. Yes.

Q. That wasn't the only way that CTR gave funds to researchers, correct?

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A. That is correct.

Q. What were the other ways that CTR made funds available to researchers?

MS. COHEN: Object as to form. Go on.

A. The two major additional ways were contracts, research contracts and the special projects.

Q. Now, my understanding is that one major difference between the grant-in-aid projects and the contract projects were that in the grant-in-aid projects, the investigators would come unsolicited to CTR with their proposals and by contracts, the contract projects, CTR would have an idea of what they wanted or a project that they would then propose to an investigator.

Is my understanding correct of that difference?

A. I think that's generally true. Although I am not certain whether some of the investigators involved in the contract research might not have come to CTR with the proposal in

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hand and solicited, so I am not sure whether all of that was initiated by CTR. I am not sure. Basically I am not sure that that's true.

Q. Maybe I am a little unclear then.

If the researcher was coming to CTR with a proposal already in hand, how did that differ from a grant-in-aid situation?

A. Okay. The difference -- okay.

MS. COHEN: Do you want me to object to the form and ask him to rephrase it?

MR. HOSKINS: No.

A. No. I can answer. It is a little bit complicated to answer because basically there are differences between grants and contracts which don't necessarily include who initiated the project. A contract can also be initiated by the investigator, but a contract generally has more stipulations to it. It is more of, I hate to use the word legal, but legal document.

Q. I hate to use the term, too.

A. When you do contract research, generally

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you are pinned down, I hate to use that term also, pinned down to doing exact experiments and exactly the same terms, the way it is dictated by the contract. In other words, you have to start with 12 humans or 1,200 rats over a certain period of time, and generally in contracts the data belong to the sponsor.

Q. I see.

A. In grants-in-aid in general, even though some grants-in-aid, the idea originates with the sponsor, usually it originates with the applicant or the investigator. The rules are less stringent. You usually have a budget which you need to abide by in general terms, but if you get a shortcut to get to the answer faster, if you can get to the answer using 50 rats instead of 1,200, that's fine. You would get to use the money for something else.

Q. I see.

A. And most of the time with respect to grants-in-aid, the data belong to the -- the

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grant, if you work in the university, the grant is granted to the institution, not to the individual, but the data belong to the university and to the individual.

Q. Thank you.

Could you please describe your understanding of special projects as that term was used in CTR.

A. Yes. Special projects were something that went on in CTR from about 1966 to about 1990. There were about 120 of them that I have seen summarized in the publications that emanated from them, and these were projects that were initiated by lawyers working for the tobacco companies with the idea to get data to be used in legislation.

MS. COHEN: You did it. You said "legislation".

A. Oh, sorry. I did it again. There seems to be a Freudian thing here. Litigation, not legislation. There is sort of a crossover.

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I did it again. I did it again.

MS. COHEN: Can we go off the record for a second.

(Discussion off the record.)

BY MR. CARBERRY:

Q. So is it your understanding that all 120 of the special projects, the CTR special projects were initiated by lawyers for the tobacco industry?

A. Yes, as a matter of fact. I am not aware that any of them came from any other source.

Q. In your earlier testimony you described some of your experience with fund-granting entities. You mentioned the Department of Defense and your work with the AHA, I believe.

A. Yes.

Q. In any of your prior experience with organizations of that type do lawyers ever propose research topics or research projects that the organization would then consider funding?

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A. In the not-for-profits, no, but I have done a lot of work for industry, a lot of clinical trial work, that is, studying patients with various forms of cardiovascular disease, looking at drugs or looking at other interventions like salt deprivation or salt lowering of the kind, and in those cases where industry funded funds, the proposals, there is extensive evaluation of grant applications and of data that comes out of the project before it is possible to even present the data orally at a meeting and certainly before it is possible to publish the data, and in the case of where the company or the sponsor originates the research proposal, there is clearly at least legal input in these corporations.

Q. Now, this extensive evaluation of the applications that you were talking about, that evaluation is conducted by the lawyers of these sponsor organizations or -- if you could answer that.

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A. The applications go into a black hole somewhere of these industry, you know, at the companies, and my understanding from staff within the industry is that these applications are always evaluated by legal counsel with respect to their impact on the company's business.

Q. But these applications wouldn't, that wouldn't be the sole evaluation that goes on with the applications? They are obviously evaluated by other people within the sponsor organization for scientific merit and other attributes, correct?

A. I would think so.

Q. You stated that one of the purposes of the special projects was to gather data for use in litigation. Was another purpose of these special projects to develop relationships with potential witnesses to serve in litigation or other circumstances?

A. I am not aware that that was a purpose either stated or unstated. I don't know.

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Q. What is your understanding of, for lack of a better term, the corporate structure of CTR? I know that we have the SAB, the Scientific Advisory Board, and the scientific director.

Do you have any understanding as to other bodies or groups within the structure of CTR?

MS. COHEN: Object as to form. Go ahead.

A. Yes. There is another committee that sort of is above the Executive Committee that's sort of above this group and includes representatives from the industry in various companies.

Q. The tobacco industry?

A. Yes. The tobacco industry.

Q. Was that Executive Committee ever referred to as the Board of Directors or is that a separate entity or was there no Board of Directors?

A. Yeah, I think it was called Board of

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Directors.

Q. And is it true that this Board of Directors or Executive Committee had control over the budget of CTR?

A. I am not sure of that, but I essentially assume so.

Q. Are you aware of the number of grants that were issued by CTR to members of the Scientific Advisory Board or institutions with which they were affiliated?

A. No. I can't quote you a number, but substantial numbers.

Q. Substantial numbers were granted to CTR members or their institutions?

A. Correct.

Q. In your prior experience with other research fund-granting organizations, is this a common practice that people, individuals who are essentially approving grants are also potential applicants or recipients, potential recipients of grants from that organization?

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A. Oh, yes. It is a very common practice.

Q. Were SAB members, did they receive compensation for their work as members?

A. Yes.

Q. And that money was paid out of CTR's general budget or was that from another source?

A. I don't know.

Q. Are you familiar with an entity known as the Industry Research Committee in regards, with relation to CTR?

A. Now, there is the Tobacco Industry Research -- different? That was the predecessor of CTR.

Q. I understand that.

A. Okay.

Q. I am talking about a different entity. It was called the IRC or Industry Research Committee. Do you have any knowledge of that, of an entity bearing that name?

A. I don't recall if I read about it. I do not recall.

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Q. You spoke a lot earlier today about reviewing the minutes of SAB meetings. Generally, who was in attendance at such meetings? Who would be in attendance at such meetings?

A. The SAB members, the scientific staff which included the scientific director, and there were usually two or three deputies. There were some members of the Board of Directors. There were some, basically some tobacco company lawyers, and the chairman of the Board of Directors I think was usually sort of a retired tobacco executive most of the time.

Q. You said tobacco company lawyers. Were you referring to general counsel or inside counsel of these tobacco companies or outside counsel of the tobacco companies?

A. I don't recall specifically. There may have been a mixture. And there was some counsel specifically assigned to CTR, a lawyer or lawyers. I don't remember how many.

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Q. You mentioned Ed Jacob earlier as a lawyer for CTR?

A. Yes, but I don't remember if there was more than one lawyer at any one time.

Q. The members of the Executive Committee, were they generally tobacco company lawyers or were they tobacco company business people? Was there a certain position that was normally appointed or put on that Board? How did that work?

A. I don't recall.

Q. Are you familiar with the name William Hoyt?

A. Yes.

Q. Who is William Hoyt?

A. He was -- oh, boy! He was involved with CTR. I am not sure whether he was a scientific or whether he was a legal representative.

Q. If I said that he served as president of CTR, would that refresh your recollection?

A. That means that he is not a scientist.

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That means he originated from one of the tobacco companies.

Q. Are you familiar with the name Loraine Pollice, P-O-L-L-I-C-E?

A. I am generally familiar with that name.

Q. Do you have any idea who she was?

A. I believe that she was an employee of CTR and a staff member, non-scientific, layperson.

Q. Are you familiar with the name Amy Mishkin?

A. No.

Q. When CTR received project proposals or applications from investigators, who would those normally be directed to?

MS. COHEN: Objection.

A. It went into the office in New York, and someone, I understand one of the scientific staff or the whole scientific staff would distribute them to two members of the Scientific Advisory Board. There was a two-step review process, at

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least at the stage where I know the facts because I was there, and they would send these preliminary applications that were very brief out to two members of the SAB who would give an opinion, brief review of the ranking.

If the application was favorably reviewed on that basis, the applicant would be asked to submit a full application which would be sent back to the same two people for a more extensive formal review and would be discussed by the committee as a whole, by the SAB as a whole at one of its meetings which I think it was twice a year they discussed grants. They met at other times to discuss policy, and then depending on the priority that was obtained and then some other considerations, like balancing portfolio, either the application would be either funded or not funded or funded fully or funded in part.

Q. Were these preliminary applications ever referred to within CTR as cases?

A. I don't recall that language.

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Q. Are you aware of any circumstances where cases or preliminary applications were distributed to CTR lawyers for legal review before being circulated to scientific individuals within CTR?

A. If that happened, I am not aware of it.

Q. Are you aware of circumstances where preliminary applications never received a preliminary encouragement or discouragement from the SAB?

MS. COHEN: Object as to form. Go ahead.

A. I am not aware of such a situation.

Q. So it is your understanding that every preliminary application that came into CTR was given a thumbs up or a thumbs down? None of them just lapsed?

MS. COHEN: Object as to form. Go ahead.

A. Yes, I am not aware of the lapsing

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phenomenon.

Q. Are you familiar with the Literature Retrieval Division?

A. Yes.

Q. What do you know about the Literature Retrieval Division?

A. The Literature Retrieval Division was part of the CTR that had the mandate of doing literature searches.

Q. And to whom did they report on the literature searches?

MS. COHEN: Object as to form. Go ahead.

A. I'm not sure whether they reported to the scientific director or to the president or to some lower person. I don't know.

Q. Is it your understanding that the Literature Retrieval Division conducted its activities at the direction of the tobacco industry lawyers?

A. I don't know that. I don't know if they

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received them.

Q. Are you familiar with Maxon Laboratories, M-A-X-O-N?

A. No.

Q. Are you familiar with the name Severi, S-E-V-E-R-I?

A. No.

Q. Did CTR publish all of the results of all of the projects that it funded?

MS. COHEN: Object as to form.

A. CTR per se as a publisher published annual reports which included abstracts or summaries which we submitted with the grantees of the work that we had done which also listed where the scientific journals and which the material was published, listed where we were from, listed other sources of funding. CTR published that and distributed it to grantees, to anybody that wanted it. That's the major publication of CTR. It encouraged grantees to publish their work in peer reviewed journals that journalists could get

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the work into. It encouraged contractors to publish their work. It also encouraged special projects, investigators to publish their work.

Q. Aside from these annual reports, did CTR publish or cause to be published any other material, any other publications?

MS. COHEN: Object as to form. Go ahead.

A. In the early days, in recent years I am not aware of any. In the early days when Hill & Knowlton was very heavily involved, they, the CTR or the TIRC published a lot of press releases and public relations statements, so on, other things, speeches by people like C.C. Little.

Q. When did that practice end, come to an end?

MS. COHEN: Objection as to form. Go on.

A. That practice seemed to have dwindled over time. Now, if there was a specific time point when it stopped completely or if it stopped

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completely, I am not entirely certain.

Q. Around what time frame are we talking about when we talk about this dwindling?

A. Dwindling sort of at its peak at the inception of the organization in 1954, and then it dwindled over the '50s and the '60s. I think it essentially ceased sometime in the '70s.

Q. So it is safe to say that from the mid '70s onward, CTR only published these annual reports and did not publish press releases and other things of that nature?

MS. COHEN: Object as to form.

A. That is my recollection. That is my recollection.

Q. You mentioned Hill & Knowlton earlier. Did Hill & Knowlton, did a representative of Hill & Knowlton regularly attend SAB meetings?

A. Early on, yes.

Q. Do you know about what point?

A. I think that phenomenon coincided with what we just talked about, the press releases and

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the public relations statements, so probably the 1970s, but I, frankly, would have to look back at the minutes to be precise.

Q. You stated earlier, and if I mischaracterize, forgive me and correct me, that technically the scientific director would approve a grant upon the advice of the SAB; --

A. That is correct.

Q. -- is that correct?

To your knowledge, was there ever a time when the scientific director disagreed with or went against the advice of the SAB in approving a grant application or disapproving a grant application?

MS. COHEN: Object as to form. Go ahead.

A. I don't recall an example from the minutes. I cannot say that it never happened.

MR. CARBERRY: Thank you. I think that is all I have.

MR. MONICA: No questions.

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MR. BURTON: No questions.

MR. HOSKINS: Do you read and sign?

MS. COHEN: We want to read.

(Examination concluded -- 1:07 p.m.)

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CERTIFICATE OF DEPONENT

I hereby certify that I have read and examined the foregoing transcript, and the same is a true and accurate record of the testimony given by me.

Any additions of corrections that I feel are necessary, I will attach on a separate sheet of paper to the original transcript.

_____

SUZANNE OPARIL

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STATE OF MARYLAND SS:

I, DEBORAH C. D. SHUMAKER, a Notary Public of the State of Maryland, do hereby certify that the within named, personally appeared before me at the time and place herein set out, and after having been duly sworn by me, was interrogated by counsel.

I further certify that the examination was recorded stenographically by me and this transcript is a true record of the proceedings.

I further certify that the stipulations contained herein were entered into by counsel in my presence.

I further certify that I am not of counsel to any of the parties, nor an employee of counsel, nor related to any of the parties, nor i any way interested in the outcome of this action.

As witness my hand and notarial seal this 6th day of March, 2000.

My commission expires

July 1, 2002 Notary Public

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REPORT OF DR. SUZANNE OPARIL

1. Designation

Suzanne Oparil, M.D.
Director, Vascular Biology and Hypertension Program
University of Alabama at Birmingham
Birmingham, AL 35294

2. Qualifications

My qualifications are set forth in my *curriculum vitae*, a copy of which is attached as Exhibit A to this Report.

3. Basis of Expert Opinion

My opinions are based upon my knowledge and expertise as an experienced scientific investigator, teacher, administrator and peer reviewer, my own experience and knowledge about CTR and other organizations that fund scientific research, and my knowledge about the quality and reputations of scientific institutions and researchers. I also rely on the material I have read to date, testimony being given and documentation being produced. This may include (1) CTR's annual reports for years from 1956 through 1996, (2) publications of research funded through CTR Special Projects, (3) a summary of CTR Special Projects provided to the Subcommittee on Energy and Commerce of the United States House of Representatives, (4) the reports of the Surgeon General, Food and Drug Administration, and American Medical Association/ Education Research Fund and (5) other CTR and tobacco industry documents. A list of documents upon which I have relied in forming my expert opinions, denoted by exhibit numbers from CTR's trial exhibit list in the State of Minnesota Medicaid cost-recovery litigation, is attached as Exhibit B to this Report.

4. Subject Matter of Expected Testimony

Based upon my expertise, qualifications, and review of materials as stated above, I am prepared to offer the following opinions related to CTR.

EXHIBIT Oparil 1 3/26/98 DS

PLAINTIFF'S EXHIBIT Oparil 1

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- CTR is and has been a legitimate research institution involved in the funding and administration of biomedical grants and contracts. CTR has performed an important service to the biomedical community through the grant-in-aid research program and by its research contracts funded by CTR with the advice of its Scientific Advisory Board ("SAB").

- The members of CTR's Scientific Advisory Board ("SAB") have consistently been scientists of very high quality and reputation. The collective experience of the SAB membership has consistently been impressively broad.

- The process by which the SAB disperses CTR funds (whether by grant or contract) and monitors research is similar to the manner in which such tasks are done by other funding institutions. Researchers supported by such CTR grants or contracts have the same independence accorded researchers sponsored by governmental agencies or by voluntary health organizations or foundations. Indeed, a substantial number of CTR-funded researchers have also received support from these other institutions.

- Many of the researchers who have received grants-in-aid from CTR are scientists at the highest levels in their field. Many of these scientists are affiliated with the most prominent medical research institutions in the United States.

- The quality of the research supported by CTR grants-in-aid has been very high, and some of this research has been extremely significant. The research supported by CTR grants-in-aid, including basic scientific research at the cellular and molecular levels, has been appropriate research relevant to smoking and health issues including addiction, and has advanced scientific knowledge of the relationship between tobacco smoking and disease. Some of this research has been extremely significant in the development of knowledge in particular scientific fields.

- There have been significant changes in emphasis in scientific research over the past 40 years. In particular, the last two decades have seen an increased focus on the use of basic scientific research to study disease etiology, including the etiology of diseases linked to smoking. The research supported by CTR grants-in-aid, including basic scientific research at the cellular and molecular levels, has generally reflected the changing focus in biomedical research as a whole and has been relevant to smoking and health issues. A significant amount of this research has been cited in support of statements, including the reports of the various Surgeons General on smoking and health and the 1995 petition of the Food and Drug Administration relating to nicotine.

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- Much of the scientific research done in the United States is conducted under the direct or indirect sponsorship of industry or other for-profit groups. This sponsorship is important to the development of scientific knowledge. Neither the integrity nor the validity of scientific research is determined by the source or mechanism of funding for the research, or even by the source of ideas for the research. Rather, it is dependent upon the integrity and competence of the scientists who carry out the research and on the peer review process.

- Contract research is a legitimate part of the scientific enterprise. Contracts are a common, and entirely proper mechanism for the funding of scientific research. The integrity of scientific research is not determined by the source or mechanism of funding for the research. It is dependent upon the integrity of particular scientists and in the peer review process.

- The so-called "Special Projects" research administered by CTR was also legitimate scientific research. Although not generally of the same nature as the grant-in-aid research, the "Special Projects" research was performed by competent scientists working at respectable institutions, much of it published in well-regarded journals.

- I may also comment upon the opinions expressed by other witnesses in this case and the evidence upon which they rely, to the extent that such evidence or opinions are within the scope of my expertise.

Suzanne Oparil, M.D.

Suzanne Oparil, MD

Dated: 09/29/99

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CURRICULUM VITAE
Suzanne Oparil, M.D.

Born: [DELETED] Elmira, New York
Citizenship: United States

Education:

1953-1957	Thomas A. Edison High School, Elmira Heights, New York
1957-1961	A.B., Cornell University, Ithaca, New York
1961-1965	M.D., Columbia University, College of Physicians and Surgeons, New York, New York

Positions:

1965-1966	Intern in Medicine, Presbyterian Hospital, New York
1966-1967	Junior Assistant Resident in Medicine, Presbyterian Hospital, New York
1967-1968	Senior Assistant Resident in Medicine, Massachusetts General Hospital, Boston, Massachusetts
1968-1971	Clinical and Research Fellow in Medicine, Cardiac Unit, Massachusetts General Hospital, Boston, Massachusetts
1971-1975	Assistant Professor of Medicine, University of Chicago Medical School, Chicago, Illinois
1975-1977	Associate Professor of Medicine, University of Chicago Medical School, Chicago, Illinois
1977-1981	Associate Professor of Medicine, University of Alabama School of Medicine, Birmingham, Alabama
1980-1981	Assistant Professor of Physiology and Biophysics, University of Alabama School of Medicine, Birmingham, Alabama
1981-present	Professor of Medicine, University of Alabama School of Medicine, Birmingham, Alabama
1985-present	Director, Vascular Biology and Hypertension Program, University of Alabama School of Medicine, Birmingham, AL
1993-present	Professor of Physiology and Biophysics, University of Alabama School of Medicine, Birmingham, Alabama

Fellowships:

1968-1971	National Institutes of Health, Fellow in Cardiology (HE-5196-13)
1973-1978	American Heart Association Established Investigator

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EXHIBIT A

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Organizations:

- Alpha Omega Alpha
  - Director-at-Large, 1991
  - Treasurer, 1994
- Phi Beta Kappa
- Sigma Xi
- American College of Cardiology
  - Fellow, 1992
- American Federation for Clinical Research
  - Midwest Councillor, 1974-1975
  - National Councillor, 1975-1978
  - Secretary-Treasurer, 1978-1980
  - President-Elect, 1980-1981
  - President, 1981-1982
- American Society for Clinical Investigation, 1977-
  - Secretary-Treasurer, 1983-1986
- Association of American Physicians, 1983-
- Central Society for Clinical Research, 1974-1986
- Southern Society for Clinical Investigation, 1978-
- American Physiological Society, 1978-
  - Clinical Physiology Advisory Committee, 1992-
- American Society of Hypertension, 1988-
  - Public Policy Committee, 1990-1993
  - Scientific Program Committee, 1990-1991
  - Executive Council Member, 1995-1998
- American Heart Association
  - Board of Directors Member at Large, 1992
  - Council for High Blood Pressure Research
    - Medical Advisory Board, 1973-
    - Nominating and Membership Committee, 1979-1982
    - Executive Committee, 1985-1990
    - Vice Chairman, 1986
  - Council on Basic Sciences, 1978-
    - Member-at-Large, Executive Committee, 1979-1981
    - Chairman, Louis B. Katz Prize Committee, 1984-1986
    - Chairman, 1988-1990
    - Chairman Budget Committee, 1990-1991
  - Steering Committee for Research, Medical and Community Program, 1989-1991
  - President's Advisory Committee on Public Policy, 1989-1990
  - Public Policy Advisory Committee, 1989-
    - Chairman, 1990-
  - Chicago Heart Association Hypertension Committee
    - Chairman, 1975-1977
  - Chicago Heart Association Research Committee, 1973-1977
  - Alabama Affiliate Research Review Committee, 1978-
    - Chairman, 1981-1983
  - Alabama Affiliate Vice President, 1986-1987
  - Alabama Affiliate President-Elect, 1987-1988

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Alabama Affiliate President, 1988-1989
President-Elect, 1993-1994
President, 1994-1995
The Association for Women in Science, 1980-
Inter-American Society of Hypertension, 1980-
Central Clinical Research Club
Midwest Salt and Water Club
Member, Visiting Faculty, National High Blood Pressure Education Program, 1974-
American Association for the Advancement of Science, 1977
Alpha Epsilon Delta
Phi Kappa Phi
NIH Study Section (Pharmacology A), 1974-1978
NIH Task Force on Research Needs in Endocrinology and Metabolic Diseases-Hypertension and Cardiovascular-Renal Area, 1978-
NIH Hypertension Task Force, 1976-1978
NHLBI Hypertension Task Force, 1990
NIH Heart, Lung and Blood Research Review Committee B, 1982-1986.
Food and Drug Administration, Advisory Panel on Cardiovascular and Renal Drugs, 1977-1981
Diplomate, American Board of Internal Medicine, 1970
Society for Experimental Biology and Medicine Councillor, 1992-1996
Society for Neuroscience, 1985
Endocrine Society, 1978-
Sterling Drug, Inc., Board of Scientific Advisors, 1988-1991
Institute of Medicine of the National Academy of Sciences, 1991
Committee on Human Rights - Correspondent, 1992
Member of the Joint National Committee on Detection, Evaluation, and Treatment of High Blood Pressure, JNC V, 1991
International Society for Heart Research, American Section
NIH Research Training Review Committee, NHLBI, 1992-1996
Chairman: 1995-present
Chairman, Committee to Advise Department of Defense on Its Breast Cancer Program, 1993
National Advisory Panel for the ADA's Nutrition and Health Campaign for Women, 1993
American Society of Hypertension, Executive Council, 1995
Czechoslovak Society of Arts and Sciences, 1995
American Society for Nutritional Sciences, 1996
North American Vascular Biology Organization, 1996
Japanese Circulation Journal, International Advisory Board, 1997-1999
American College of Cardiology, Extramural Continuing Education Committee, 1997

Editorial Responsibilities:

Circulation Research Editorial Board, 1974-1977
Circulation Editorial Board, 1978-1983
American Journal of Physiology: Heart and Circulatory Physiology Editorial Board; 1977-1979, 1981-1987
Hypertension, Associate Editor, 1979-1983, Editorial Board, 1984-
Proceedings of the Society for Experimental Biology and Medicine Editorial Board, 1978-1982

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Cardiology Update: Review for Physicians Editorial Board, 1979-
Journal of Hypertension, Editorial Board, 1989-
The American Journal of the Medical Sciences, Editor, 1984-
American Journal of Physiology: Renal, Associate Editor, 1989-1991
American Journal of Clinical Nutrition, Guest Scientific Editor, 1997
General Pharmacology: The Vascular System, Editorial Board, 1998-
The American Journal of Clinical Hypertension – For the Practicing Physician, Editorial Board, 1999-

Honors:

International Society of Hypertension, Young Investigator Award, 1979
Annual Award of the National Board of the Medical College of Pennsylvania, 1984
Who's Who in America, 1992, 1994
Lewis K. Dahl Memorial Lecture, American Heart Association, 1993
Selkurt Lectureship, Indiana University School of Medicine, 1994
Honorary Professor from Peking Union Medical College, 1994
Founder's Award of the Southern Society for Clinical Investigation, 1995
Louis Gross-Harold Segall Lecture, Jewish General Hospital, Montreal, Quebec, 1995
SSCI Founder's Medal, 1995
President's Achievement Award, UAB, 1995
The Nation's Top 20 Women Health Leaders, The Medical Herald, September 1995
Joy Goodwin Distinguished Lecturer, Auburn University, February 1996
A. Ross McIntyre Award, University of Nebraska, May 1996
Distinguished Faculty Lecturer, University of Alabama at Birmingham, 1997
Australian Award
COSEHC Lifetime Achievement Award
Arthur A. Corcoran Memorial Lecture, American Heart Association, 1998
Ben O'Connell Memorial Lecture, 1998

Invited Lectures (Since 1993):

"Molecular Pathophysiology of Hypoxic Pulmonary Hypertension", University of Virginia, Charlottesville, VA, January 26, 1993.

"The Vaso-Protective Effect Anti-Hypertensive Drugs", Delaware Academy of Family Physicians, Wilmington, DE, January 27, 1993.

"The Clinical Relevance of Tissue ACE", Grand Rounds, Bethesda Naval Hospital, Bethesda, MD, January 28, 1993.

"End Organ Damage in Hypertension", Georgia Baptist Hospital, Atlanta, GA, March 24, 1993.

"Pulmonary Vasodilatory Response to ANP During Hypoxia", American Physiological Society Symposium, Humoral Modulation of Pulmonary Vascular Resistance During Hypoxia, New Orleans, LA, March 31, 1993.

Testimony to Food and Nutrition Board/Institute of Medicine: Revision of RDAs, Washington, D.C., June 29, 1993.

"Hypertension in African Americans: Socioeconomic Stress and Sympathetic Nervous System

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Activity", Neuroendocrine Aspects and Consequences of Hypertension Symposium, Meharry Medical College, Nashville, Tennessee, July 13, 1993.

"The Role of Dietary Calcium in the Prevention and Treatment of Hypertension." National Dairy Council, Saratoga Springs, NY, July 23, 1993.

"Hypertension in Women." University of Texas Health Center at Tyler, Tyler, Texas, October 29, 1993.

"Heart Disease in Women." Sinai Hospital of Baltimore, Baltimore, MD, November 4, 1993.

"Strategies to Investigate the Hypertensive Menopausal Woman." Session: Hypertension in Postmenopausal Women at the International Forum for the Evaluation of Cardiovascular Care, Monte Carlo, January 21, 1994.

"Potential for New Treatment Modalities in Pulmonary Hypertension." Pulmonary Hypertension Symposium, Basel, Switzerland, February 1, 1994.

"Cardiovascular Disease in Postmenopausal Women: The Cardioprotective Effects of Estrogen." Task Force on Women & Heart Disease, University of Pittsburgh, Pittsburgh, PA, February 11, 1994.

"Sodium and Hypertension Update." Salt Institute Annual Meeting, Phoenix, AZ, February 25, 1994.

"Gender Differences of the Demography of Coronary Disease and Coronary Risk Factors." Cardiac Issues in Women - Clinical Rounds Satellite Broadcast - University of Alabama at Birmingham, AL, March 3, 1994.

"Heart Disease: The Equal Opportunity Affliction." American Dietetic Association, Smithsonian Institution, Washington, D.C., March 5, 1994.

"Neuronal Basis of Salt Sensitivity." 3rd International Symposium on Hypertension and Coronary Heart Disease, Beijing, China, March 30, 1994.

"The Neuronal Basis of Salt Sensitive Hypertension." Selkurt Lectureship, Indiana University School of Medicine, Indianapolis, IN, April 20, 1994.

"Cardiovascular Health--The American Heart Association Perspectives and Mission." Presented at Recognition and Prevention of Heart Disease: State of the Art--Contribution of the Bogalusa Heart Study, 20th Anniversary Symposium, Tulane University Medical Center, New Orleans, LA, April 28, 1994.

"Vaso-Protective Effects of Antihypertensive Agents: Key Considerations in Modern Therapeutics." 30th Annual Cardiovascular Symposium, Hoffman Heart Institute and St. Francis Hospital & Medical Center, Hartford, CT, May 4, 1994.

"The Neural Basis of Salt Sensitive Hypertension." Dept. of Pharmacology & Toxicology, University of Oulu, Oulu, Finland, May 30, 1994.

Invited Lectures (continued)

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"Tissue Angiotensin Converting Enzyme." Vascular Endothelium: Responses to Injury, 1994 NATO Advanced Study Institute, Crete, Greece, June 26, 1994.

Invited Lectures (cont'd)

"Coronary Heart Disease: The Impact of Health Care Reform." Coronary Heart Disease: The Continuum of Care from Prevention to Rehabilitation, AHA Middle Tennessee Region in conjunction with St. Thomas Hospital, Nashville, TN, August 4, 1994.

"Cardiovascular Health at the Crossroads: Outlook for the 21st Century." Presented as the Presidential Address at the 67th Annual Scientific Sessions of the American Heart Association, Dallas, TX, November 14, 1994

"State of the Art: The Intracardiac Renin-Angiotensin System in the Pathogenesis of Heart Failure." Presented at the 67th Annual Scientific Sessions of the American Heart Association, Dallas, TX, November 16, 1994.

"The Central Nervous System and Salt-Induced Hypertension." Presented at the 2nd International Congress of Pathophysiology, Kyoto, Japan, November 24, 1994.

"Antihypertensive Therapy in the Context of Total Cardiovascular Risk: The Rational Basis for Therapeutic Recommendations." Presented at the Sumitomo Cardiovascular Forum, Tokyo, Japan, November 26, 1994.

"Angiotensin Converting Enzyme Environmental Regulation and Role in Cardiovascular Homeostasis: Hypertrophy and LV Remodeling." West Roxbury VAMC, Brookline, MA, January 19, 1995.

"Heart Disease in Women." Cardiovascular Institute, Boston University School of Medicine, Boston, MA, January 20, 1995.

"Endothelin-1: Mediator of Hypoxic Pulmonary Hypertension." Cardiology Grand Rounds, Vanderbilt University, Nashville, TN, January 26, 1995.

"Hypertension as a Multi-system Disease." Merck Human Health 1995 Regional Consultants' Meeting for Hypertension, Atlanta, GA, February 11, 1995.

"Hypertension: Treating Beyond the Numbers." Merck Human Health 1995 Regional Consultants' Meeting for Hypertension, Winston-Salem, NC, February 23, 1995.

"The American Heart Association: What's In It for Nurses?" 45th Annual Cardiac Symposium for Nurses, presented by the Nurses' Education Committee, AHA, Cumberland Region, Chattanooga, TN, February 24, 1995.

"Heart Disease in Women." Cardiology Update 1995, Huntsville Hospital Foundation, Inc., Huntsville, AL, February 25, 1995.

"Clinical and Population Aspects of Hypertension and Its Sequelae." US-Poland Workshop, The University of North Carolina at Chapel Hill, Chapel Hill, NC, March 16, 1995.

Invited Lectures (continued)

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"Sexual Dimorphism of Cardiovascular Disease." Conferences-Hypertension Montreal, IRCM (Institut de recherches cliniques de Montreal), September 8, 1995.

"Hypertension in Women." The Second Chicago Women & Heart Disease Conference, AHA of Metro Chicago, Chicago, IL, April 28, 1995.

"Endothelin as a mediator of Hypoxic Hypertension: Pathophysiology and Clinical Implications." Alumni Day Scientific Session, College of Physicians & Surgeons of Columbia University, New York, NY, May 13, 1995.

"The Tissue Renin-Angiotensin System in Health & Disease & Sexual Dimorphism in the Cardiovascular System: Experimental Observations & Therapeutic Implications." Plenary Lecture, XVII Annual Sessions of the International Society for Heart Research, Perdido Beach Resort, Orange Beach, AL, May 23, 1995.

"Cardiac Renin Angiotensin System in Hypertrophy and Failure." Mayo Clinic Cardiovascular Grand Rounds, Mayo Clinic, Rochester, MN, August 11, 1995.

"Myocardial Renin Angiotensin System and Ventricular Remodeling." IBC Heart Failure Conference, Philadelphia, PA, August 17, 1995.

"New Approaches to Antihypertension Therapy: The Angiotensin II Antagonists." Alabama Affiliate AHA Cardiovascular Conference, Dothan, AL, August 19, 1995.

"Clinical Review of Antihypertensive Agents." 2nd Annual Meeting of COSEHC Invited Consortium of Southeastern Hypertension Centers, Charleston, SC, August 26, 1995.

"Management of the Complicated Hypertensive: Management of Resistant Hypertension, Heart Disease and Renal Disease." 2nd Annual Meeting of COSEHC Consortium of Southeastern Hypertension Centers, Charleston, SC, August 27, 1995.

"Cardiac Renin Angiotensin System in Hypertrophy and Failure." Cardiology Grand Rounds, University of Pittsburgh, September 5, 1995.

"Brain ANF and the Pathogenesis of Salt-Sensitive Hypertension." Conferences-Hypertension Montreal, IRCM (Institut de recherches cliniques de Montreal), September 8, 1995.

"New Concepts in Hypertension: Treating the Uncontrolled Hypertensive Patient." Medical Grand Rounds, University of Tennessee Medical Center, Knoxville, TN, September 12, 1995.

"Endothelin and Hypoxic Pulmonary Hypertension." Postgraduate Seminar in Cardiovascular Physiology, New England Medical Center, Boston, MA, September 26, 1995.

"Cardiac Renin Angiotensin System." Cardiology Grand Rounds, Massachusetts General Hospital, Boston, MA, September 27, 1995.

"Tissue ACE: Clinical Relevance in Pathophysiology and Treatment." 25th Annual Michigan Cardiovascular Research Forum, Oakland University, Rochester, MN, September 29, 1995.

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Invited Lectures (cont'd)

"Hypertension in African Americans - Socioeconomic Stress & Sympathetic Nervous System Activity." Medical Grand Rounds, Grady VA Hospital, Decatur, GA, October 3, 1995.

"The Path from Cardiac Hypertrophy to Heart Failure: New Insights That Affect Therapy." "Torch Bearer" lecturer for AHA, Jacksonville, FL, October 11, 1995.

"The Pathogenesis of Salt Sensitive Hypertension." Nephrology Division and Hypertension Center, University of Florida, Gainesville, FL, October 12, 1995.

"AT, Receptor Blockers: An Innovation in Antihypertensive Therapy." University of Florida, Gainesville, FL, October 12, 1995.

"Hypertension: Facts, Fallacies and the Future." The Louis Gross-Harold Seagall Lecture, Jewish General Hospital, Montreal, Quebec, October 18, 1995.

"The Cardiac Renin Angiotensin System in Hypertrophy and Failure." University of Cincinnati College of Medicine, Cardiovascular Center Distinguished Lecturer, Cincinnati, OH, October 30, 1995.

"State of the Art: Gender Differences in Cardiovascular Disease." 68th Annual Invited Scientific Sessions of the American Heart Association, Anaheim, CA, November 13, 1995.

"Antihypertensive Therapy and Atherosclerosis in Coronary Heart Disease." XIV Memorial Lecture, Fundación Fernández-Cruz, Madrid, Spain, November 29, 1995.

"Risk Factors and Cardiovascular Protection in Females: Effects of Estrogen and Progestin on the Vasculature." XV Interamerican Congress of Cardiology, Santiago, Chile, December 8, 1995.

"Cardiovascular Risk Factors in Women." Joy Goodwin Distinguished Lectureship, Auburn University, Auburn, AL, February 13, 1996.

"Cardiovascular Risk Reduction in Women." Kynett Cardiology Program on Women and Heart, Temple University, Philadelphia, PA, February 28, 1996.

"Hypertension Women and Heart Disease." Cardiology Conference, Cornell Medical Center, New York, NY, March 4, 1996.

"LVH Is a Risk Factor in Hypertension, Pathogenesis and Treatment Rationale." First National LIFE Meeting for Physicians, Oslo, Norway, March 9, 1996.

"Endothelin: Mediator of Hypoxic Pulmonary Hypertension." Medical College of Georgia, Augusta, GA, April 2, 1996.

"Cardiovascular Risk in Hypertension." 5th National Congress, Sociedad de Hipertensión Arterial de Mexico, A.C., Mexico City, Mexico, April 21, 1996.

"Cardiovascular Disease in Women." Second International Workshop on Hypertension in Postmenopausal Women, Munich, Germany, April 27, 1996.

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Invited Lectures (cont'd)

"How Low Should Blood Pressure Go?" American Geriatrics Society and the American Federation for Aging Research, Chicago, IL, May 2, 1996.

"Cardiovascular Disease in Women." Chinese Heart Association, Taiwan, China, May 5, 1996.

"Salt, Brain and Blood Pressure." A. Ross McIntyre Award, University of Nebraska, Omaha, NE, May 13, 1996.

"The Cardiac Renin Angiotensin System in Hypertrophy and Failure." Medical Grand Rounds, Ohio State University, Columbus, Ohio, May 30, 1996.

"Estrogens, Progestins and Vasoprotection." University of Pennsylvania Medical Center Distinguished Visitor, Philadelphia, PA, May 31, 1996.

"Cardiovascular Risk Reduction in Women." Focus on Women's Health Symposium, Distinguished Visitor, University of Pennsylvania, Philadelphia, PA, June 1, 1996.

"Do Hormones Protect Blood Vessels from Disease?" AHA Health & Science Journalists Forum, Portsmouth, New Hampshire, July 16, 1996.

"Calcium Channel Blockers Controversy." Virginia Academy of Family Physicians - 46th Annual Scientific Assembly, Williamsburg, Virginia, July 21, 1996.

"Cardiovascular Effects of Angiotensin II." Medical Grand Rounds, Medical University of South Carolina, Charleston, South Carolina, July 30-31, 1996.

"Current Concepts and Controversies in Antihypertensive Therapy." Montgomery, Alabama, August 5, 1996.

"Left Ventricular Hypertrophy in the Hypertensive Patient: Pathophysiology and Implications for Specific Treatment." LIFE Program, Kansas City, Missouri, August 20, 1996.

"In-Hospital Treatment and Management of Blood Pressure: Emerging Issues." Neurex Consensus Meeting, Coral Gables, Florida, September 20, 1996.

"Current Advances and Controversies in the Treatment of Essential Hypertension." Winchester Medical Center, Vienna, Virginia, September 25, 1996.

"The Intracardiac Renin Angiotensin System in Myocardial Hypertrophy & Failure." Grand Rounds, University of Kentucky, Lexington, Kentucky, October 1-2, 1996.

"Vasoprotection and Post Menopausal Hormone Replacement Therapy." Medical Grand Rounds, Mayo Clinic, Rochester, Minnesota, October 8-9, 1996.

"New Approaches to the Treatment of Hypertension and Its Vascular Complications: The Angiotensin II Receptor Blockers." Nashville, Tennessee, October 10, 1996.

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Invited Lectures (cont'd)

"Treating High Blood Pressure: Therapies, Prejudices, and Pitfalls." World Foundation for Medical Studies in Female Health, San Antonio, Texas, October 25, 1996.

"Cardiovascular Disease in Women." St. Luke's Medical Center, Milwaukee, Wisconsin, October 26, 1996.

"Managed Care Practice and Hypertension: What is on the Horizon?" 1996 Astra Merck Cardiovascular Consultants' Conference, Indian Wells, California, November 2, 1996.

"The Sexual Dimorphism of Cardiovascular Disease: Lessons from Rodent Models." 32nd Scientific Meeting of the Society for the Spontaneously Hypertensive Rat. Osaka, Japan, November 25, 1996.

"Cardiovascular Disease in Women: Role of Hormone Replacement Therapy." Medical Grand Rounds, University of Colorado Health Sciences Center, Denver, Colorado, December 18, 1996.

"Overview of Hypertension in African Americans." The University of Georgia, Hypertension Specialty Council, Atlanta, Georgia, January 18, 1997.

"Recent Advances in Vasoprotection." Council for Tobacco Research, Boca Raton, Florida, February 3, 1997.

"Coronary Artery Disease in Women: Emerging Concepts." Association of Black Cardiologists Tenth Annual Scientific Sessions, Anaheim, CA, March 15, 1997.

"Hypertension in the Managed Care Setting." American College of Physicians - Satellite Symposium, Philadelphia, PA, March 24, 1997.

"Women in Medicine." Association of American Physicians, Washington, DC, April 27, 1997.

"Cardiovascular Disease in Women: Role of Hormone Replacement Therapy." Women and Heart Disease, Louisville, KY, April 30, 1997.

"Phase IV Recommendation." AVAPRO Phase IV Clinical Trials Sub-Team Meeting, New York, NY, May 5, 1997.

"Clinical Implications of All Receptor Blockade." Philippine College of Physicians Annual Meeting, Pasay City, M.M. Philippines, May 8, 1997.

"Pulmonary Hypertension and Potential Role of ET Receptor Blockers." Endothelin Consultants Meeting, Philadelphia, PA, May 14, 1997.

"Clinical Crossroads - Patient with Resistant Hypertension." Clinical Crossroads Medicine Grand Rounds, Boston, MA, May 15, 1997.

"Cardiovascular Risks in Women." Cardura Study Group, Napa Valley, CA, May 27, 1997.

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Invited Lectures (cont'd)

"Current State of the Treatment of Hypertension in the U.S.A. and the World." Astra Merck Symposium, Treatment of Hypertension - New Goals for the Next Milenium, San Francisco, CA, May 28, 1997.

"All Antagonists - Are Differences Likely to Emerge?" The American Society of Hypertension, San Francisco, CA, May 29, 1997.

"Treatment of Hypertension in Managed Care." Astra Merck Regional Cardiovascular Consultants Conference, Coronado, CA, June 8, 1997.

"Postmenopausal Hormone Replacement Therapy and Vasoprotection." The Methodist Hospital's Cardiology Grand Rounds, Baylor College of Medicine, Houston, TX, June 12, 1997.

"Effects of Estrogen and Progesterone on Smooth Muscle Proliferation - Use of Animal Models." NHLBI Lymphangioleiomyomatosis (LAM) Workshop, Bethesda, MD, June 25, 1997.

"LIFE Study Update." Annual LIFE Investigators Meeting, Orlando, FL, June 27, 1997.

"Newer Approaches to Antihypertensive Therapy: Angiotensin II Receptor Blockers." Southern Medical Society Inaugural Conference on Hypertension, Manalapan, FL, June 28, 1997.

"ALLHAT Overview." 4th International Conference on Preventive Cardiology Satellite Symposium, Montreal, Canada, June 30, 1997.

"Salt: People Need to Reduce Their Consumption Only for Medical Reasons." AHA 24th Health and Science Journalists Forum, Portland, OR, July 14, 1997.

"Vasoprotective Effect of Estrogen." 1998 Gertrude and Florian Nelson Cardiovascular Research Lecture, Jackson, Mississippi, November 5, 1998.

TITLE NOT YET DETERMINED, 1998 Annual Scientific Meeting, R.D. Wright Lecture, The Executive of the High Blood Pressure Research Council of Australia, University of Melbourne, Parkville, Vic, December 1-12, 1998.

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Peng N, Wei CC, Oparil S, and Wyss JM. The Organum Vasculosum of the Lamina Terminalis Regulates Noradrenaline Release in the Anterior Hypothalamic Nucleus in Response to Increases in lasma NaC1. Submitted.

Oparil S and Bakir S. Clinical evidence with calcium antagonists in morbidity and mortality trials in cardiovascular disease. Submitted.

Carretero O and Oparil S. Essential hypertension: definition, etiology, and treatment. Submitted

Perry GJ, Mori T, Xu XY, Wei C-C, Dell'Italia LJ, Chen Y-F, Oparil S. Genetic variation in angiotensin converting enzyme does not prevent the development of cardiac hypertrophy and failure in response to aorto caval fistula. Submitted.

Kjeldsen SE, Dahlof B, Devereux RB, Julius S, de Faire U, Fyhrquist F, Ibsen H, Kristianson K, Lederballe-Pederson O, Lindholm LH, Nieminen MS, Omvik P, Oparil S, and Wedel H. One-year of antihypertensive Ttreatment and ECG-regression in 9,194 patients with left ventricular hypertrophy. The LIFE Study. Submitted.

Oparil S, Wang JG, Bakir S, and Staessen JA. New Outcome Trials of Antihypertensive Therapy. Submitted.

Oparil S, Seely EW, Williams GH, Falkner B and Sowers JR. Cardiovascular Disease in Women: Update and Review. Submitted.

Bakir S and Oparil S. Recent outcome trials of newer antihypertensives. Submitted.

Chrysant GS, Bakir S and Oparil S. Dietary salt reduction in hypertension – What's the evidence and why is it still controversial. Submitted.

Tian B, Wei C-C, Chen Y-F, Perry G, Oparil S, and Dell'Italia LJ. Mice lacking the angiotensin-converting enzyme gene express increased chymaseand have preserved tissue angiotensin II levels. Submitted.

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Abstracts in Press or Submitted for Publication 1998.

Tian B, Chen S-J, Chen Y-F, Thompson JA and Oparil S. Enhanced estrogen receptor expression following balloon injury of rat carotid arteries. Submitted to 71st Scientific Sessions, American Heart Association.

Li G, Chen Y-F, Oparil S and Thompson JA. Estrogen indirectly inhibits adventitial fibroblast migration. Submitted to 71st Scientific Sessions, American Heart Association.

Haynes RB, Kris-Etherton P, McCarron DA, Oparil S, Chait A, Resnick LM, Morris CD, Clark S, Hatton DC, Metz JA, McMahon M, Holcomb S, Snyder GW, Pi-Sunyer FX, Stern JS. Nutritionally complete prepared meal plan to reduce cardiovascular risk factors: a randomized clinical trial. J Am Diet Assoc (in press).

Zhu ST, Chen YF, Oparil S and Calhoun DA. Omapatrilat, a vasopeptidase inhibitor, enhances baroreflex gain in spontaneously hypertensive rats. Submitted

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List of Reliance Documents:
Suzanne Oparil, M. D.
(Listed by Exhibit No. or Bates No.)

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1. **CTR ANNUAL REPORTS**

MD-000012
MD-000013
MD-000017
MD-000018
MD-000021
MD-000022
MD-000024
MD-000027
MD-000179
MD-000028
MD-003615
MD-000029
MD-000181
MD-000031
MD-000037
MD-000038
MD-000041
MD-000043
MD-000048
MD-000051
MD-000052
MD-000054
MD-000057
MD-000060
MD-000064
MD-000065
MD-000068
MD-000070
MD-000072
MD-000075
MD-000077

EXHIBIT B

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MD-000080
MD-000081
MD-000082
MD-000084
MD-000085
MD-000086
MD-000089
MD-003561
MD-003614
MD-003616
MD-000061
70000302-70000618 (1997 Annual Report) (Bates Nos.)

2. **CTR SAB Meeting Minutes**

MD-001258

3. **Reports of the U.S. Surgeon General (1964, 1983 and 1988)**

MD-000102
MD-000117
MD-000078

4. **Publications Resulting from CTR Grant-in-Aid and Contracts Research (and related documents)**

MP-002716
MP-006406
MP-007758
MP-002941
MP-005316
MP-002900
MP-001297
MP-000229
MP-004120
MP-004833
MP-005538
MP-004706
MP-000297
MP-004064

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MP-004021
MP-005329
MP-006069
Publications 001552-001558 (Bates Nos.)
10035482-10035488 (Bates Nos.)
MD-000383
CTR CONTRACTS-005703-005682 (Bates Nos.)
CTR MN-042557-2573 (Bates Nos.)
11326113-6127 (Bates Nos.)
CTR MN-042574-2591 (Bates Nos.)
CTR-MN-042556E-2556 (Bates Nos.)
MP-002910
HK0125039-5039 (Bates Nos.)

5. **Publications Resulting from CTR Special Projects**

MP-008001-MP-008154

6. **Submission to "Waxman" Committee**

MD-001617

7. **Affidavits**

Affidavits of Dr. James Glenn, Dr. Harmon McAllister, and Dr. Vincent Lisanti (redacted) in the Butler litigation (i.e., in the form submitted in Chiles), and accompanying exhibits

8. **Other**

"Tobacco and Health," AMA-ERF Committee for Research on Tobacco and Health (1978)

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MP-000293
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MP-002406
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MP-005414
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MP-005196
MP-002576
MP-005461
MP-002571
MP-000288
MP-002174
MP-000046
MP-002403
MP-002399
MP-002398
MP-001907
MP-001900
MP-001891
MP-006346
MP-002531
MP-002704
MP-005228
MP-003568
MP-004488
MP-006071
MP-003617
MP-001618
MP-002839
MP-002834
MP-001876
MP-000168
MP-004299
MP-002535
MP-000953
MP-002338
MP-002456
MP-002442
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List of Cases in Which Dr. Suzanne Oparil has Testified (May 10, 1995-Present)

Engle v. R.J. Reynolds Tobacco Co., et al., No. 94-08273 (Fla. 11th Judicial Cir. Dade County March 22, 1999) (trial);

Iron Workers Local Union No. 17 Ins. Fund v. Philip Morris, Inc., No. 1:97CV1422 (N.D. Ohio Jan. 13, 1999) (deposition);

Small v. Lorillard Tobacco Co., et al., Index No. 110949/96 (N.Y. Sup. Ct. N.Y. County Nov. 25, 1997) (cross-noticed in the related cases in ***Hoskins***, ***Hulse***, ***Frosina***, and ***Zito***) (deposition);

State of Texas v. American Tobacco Co., No. 5:96CV91 (E.D. Tex. July 29, 1997)

Engle v. R.J. Reynolds Tobacco Co., et al., No. 94-08273 (Fla. 11th Judicial Cir. Dade County July 27, 1997) (deposition);

Broin v. Philip Morris Cos., Inc., et al., No. 91-49738 (Fla. 11th Judicial Cir. Dade County June 18, 1997) (deposition).

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Compensation

Dr. Suzanne Oparil is being compensated at the rate of $400 per hour in connection with her expert testimony in the instant litigation.

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IN THE CIRCUIT COURT OF THE ELEVENTH JUDICIAL CIRCUIT IN AND FOR DADE COUNTY, FLORIDA

GENERAL JURISDICTION DIVISION
CASE NO. 94-08273 CA-22

99 JUN -7 PM 5:13

HOWARD A. ENGLE, M.D., et. al.,
Plaintiffs,

v.

RJ REYNOLDS TOBACCO COMPANY, et. al.,
Defendants

VERDICT FORM FOR PHASE I

We, the Jury, return the following Verdict:

Question No. 1

[Generic Causation]

Does smoking cigarettes cause one or more of the following diseases or medical conditions?

Aortic Aneurysm	Yes ✓	No ___
Asthmatic Bronchitis, as related to COPD	Yes ___	No ✓
Bladder Cancer	Yes ✓	No ___
Cerebrovascular Disease (including Stroke)	Yes ✓	No ___
Cervical Cancer	Yes ✓	No ___
Chronic Obstructive Pulmonary Disease-COPD (including Emphysema)	Yes ✓	No ___
Coronary Heart Disease (including cardiovascular disease, hardening of the arteries, atherosclerosis, coronary artery disease and arteriosclerosis, angina abnormal blood clotting, blood vessel damage, myocardial infarction (heart attack))	Yes ✓	No ___
Esophageal (Throat) Cancer	Yes ✓	No ___
Infertility	Yes ___	No ✓

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April 19

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Kidney Cancer	Yes ✓	No ___
Laryngeal (Throat or Voice Box) Cancer	Yes ✓	No ___
Lung Cancer	Yes ✓	No ___
Adenocarcinoma	Yes ✓	No ___
Bronchioloalveolar carcinoma	Yes ___	No ✓
Large cell carcinoma	Yes ✓	No ___
Small cell carcinoma	Yes ✓	No ___
Squamous cell carcinoma	Yes ✓	No ___
Complications of Pregnancy (miscarriage)	Yes ✓	No ___
Oral Cavity/Tongue Cancer	Yes ✓	No ___
Pancreatic Cancer	Yes ✓	No ___
Peripheral Vascular Disease (including Buerger's Disease)	Yes ✓	No ___
Pharyngeal Cancer	Yes ✓	No ___
Stomach Cancer	Yes ✓	No ___

If your answer to all of the diseases, above, is "no", your verdict is for the Defendants, and you should not proceed further except to date and sign this verdict form. If you answered "yes" to any of the above questions, please answer the following questions.

Question No. 2

[Addiction/Dependence]

Are cigarettes that contain nicotine addictive or dependence producing ?

Yes ✓ No ___

Question No. 3.

[Strict Liability]

Did one or more of the Defendant Tobacco Companies place cigarettes on the market that were defective and unreasonably dangerous ?

Please answer "Yes" or "No" as to each Defendant, below. If you answer "yes" to any Defendants, please answer whether the conduct occurred during one of the following time periods:

Philip Morris, Incorporated	Yes ✓	No ___
Before July 1, 1974	Yes ___	No ___
After July 1, 1974	Yes ___	No ___

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Both before and after July 1, 1974	Yes ✓	No ___
RJ Reynolds Tobacco Company	Yes ✓	No ___
Before July 1, 1974	Yes ___	No ___
After July 1, 1974	Yes ___	No ___
Both before and after July 1, 1974	Yes ✓	No ___
Brown & Williamson Tobacco Corporation	Yes ✓	No ___
Before July 1, 1974	Yes ___	No ___
After July 1, 1974	Yes ___	No ___
Both before and after July 1, 1974	Yes ✓	No ___
Brown & Williamson Tobacco Corporation, as successor to American Tobacco Company	Yes ✓	No ___
Before July 1, 1974	Yes ___	No ___
After July 1, 1974	Yes ___	No ___
Both before and after July 1, 1974	Yes ✓	No ___
Lorillard Tobacco Company/Lorillard, Inc.	Yes ✓	No ___
Before July 1, 1974	Yes ___	No ___
After July 1, 1974	Yes ___	No ___
Both before and after July 1, 1974	Yes ✓	No ___
Liggett Group, Inc.	Yes ✓	No ___
Before July 1, 1974	Yes ___	No ___
After July 1, 1974	Yes ___	No ___
Both before and after July 1, 1974	Yes ✓	No ___
Brooke Group, Ltd., Inc.	Yes ✓	No ___
Before July 1, 1974	Yes ___	No ___
After July 1, 1974	Yes ✓	No ___
Both before and after July 1, 1974	Yes ___	No ___

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Question No.4.

[Fraud and Misrepresentation]

Did one or more of the Defendants make a false statement of a material fact, either knowing the statement was false or misleading, or being without knowledge as to its truth or falsity, with the intention of misleading smokers ?

Please answer "Yes" or "No" as to each Defendant, below. If you answer "yes" to any Defendants, please answer whether the conduct occurred during one of the following time periods:

Philip Morris, Incorporated	Yes ✓	No ___
Before May 5, 1982	Yes ___	No ___
After May 5, 1982	Yes ___	No ___
Both before and after May 5, 1982	Yes ✓	No ___
RJ Reynolds Tobacco Company	Yes ✓	No ___
Before May 5, 1982	Yes ___	No ___
After May 5, 1982	Yes ___	No ___
Both before and after May 5, 1982	Yes ✓	No ___
Brown & Williamson Tobacco Corporation	Yes ✓	No ___
Before May 5, 1982	Yes ___	No ___
After May 5, 1982	Yes ___	No ___
Both before and after May 5, 1982	Yes ✓	No ___
Brown & Williamson Tobacco Corporation, as successor to American Tobacco Company	Yes ✓	No ___
Before May 5, 1982	Yes ___	No ___
After May 5, 1982	Yes ___	No ___
Both before and after May 5, 1982	Yes ✓	No ___
Lorillard Tobacco Company/Lorillard, Inc.	Yes ✓	No ___
Before May 5, 1982	Yes ___	No ___
After May 5, 1982	Yes ___	No ___
Both before and after May 5, 1982	Yes ✓	No ___
Liggett Group, Inc.	Yes ✓	No ___
Before May 5, 1982	Yes ___	No ___
After May 5, 1982	Yes ___	No ___

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[illegible] COMPLETED [illegible]
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Both before and after May 5, 1982 Yes ✓ No ____

Brooke Group, Ltd., Inc. Yes ✓ No ____
Before May 5, 1982 Yes ____ No ____
After May 5, 1982 Yes ✓ No ____
Both before and after May 5, 1982 Yes ____ No ____

Council for Tobacco Research-U.S.A. Yes ✓ No ____
Before May 5, 1982 Yes ____ No ____
After May 5, 1982 Yes ____ No ____
Both before and after May 5, 1982 Yes ✓ No ____

Tobacco Institute Yes ✓ No ____
Before May 5, 1982 Yes ____ No ____
After May 5, 1982 Yes ____ No ____
Both before and after May 5, 1982 Yes ✓ No ____

Question No. 4a

[Fraud by Concealment]

Did one or more of the Defendants conceal or omit material information, not otherwise known or available, knowing the material was false and misleading, or failed to disclose a material fact concerning or proving the health effects and/or addictive nature of smoking cigarettes?

Please answer "Yes" or "No" as to each Defendant, below. If you answer "yes" to any Defendants, please answer whether the conduct occurred during one of the following time periods:

Philip Morris, Incorporated Yes ✓ No ____
Before May 5, 1982 Yes ____ No ____
After May 5, 1982 Yes ____ No ____
Both before and after May 5, 1982 Yes ✓ No ____

RJ Reynolds Tobacco Company Yes ✓ No ____
Before May 5, 1982 Yes ____ No ____
After May 5, 1982 Yes ____ No ____
Both before and after May 5 1982 Yes ✓ No ____

Brown & Williamson Tobacco Corporation Yes ✓ No ____

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Before May 5, 1982	Yes ____	No ____
After May 5, 1982	Yes ____	No ____
Both before and after May 5, 1982	Yes ✓	No ____
Brown & Williamson Tobacco Corporation, as successor to American Tobacco Company	Yes ✓	No ____
Before May 5, 1982	Yes ____	No ____
After May 5, 1982	Yes ____	No ____
Both before and after May 5, 1982	Yes ✓	No ____
Lorillard Tobacco Company/Lorillard, Inc.	Yes ✓	No ____
Before May 5, 1982	Yes ____	No ____
After May 5, 1982	Yes ____	No ____
Both before and after May 5, 1982	Yes ✓	No ____
Liggett Group, Inc.	Yes ✓	No ____
Before May 5, 1982	Yes ____	No ____
After May 5, 1982	Yes ____	No ____
Both before and after May 5, 1982	Yes ✓	No ____
Brooke Group, Ltd., Inc	Yes ✓	No ____
Before May 5, 1982	Yes ____	No ✓
After May 5, 1982	Yes ✓	No ____
Both before and after May 5, 1982	Yes ____	No ____
Council for Tobacco Research-U.S.A.	Yes ✓	No ____
Before May 5, 1982	Yes ____	No ____
After May 5, 1982	Yes ____	No ____
Both before and after May 5, 1982	Yes ✓	No ____
Tobacco Institute	Yes ✓	No ____
Before May 5, 1982	Yes ____	No ____
After May 5, 1982	Yes ____	No ____
Both before and after May 5, 1982	Yes ✓	No ____

CLERK OF THE CIRCUIT COURT
HARVEY RUVIN, CLERK

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Question No. 5

[Civil Conspiracy-Misrepresentation]

Did two or more of the Defendants enter into an agreement to misrepresent information relating to the health effects of cigarette smoking, or the addictive nature of smoking cigarettes, with the intention that smokers and members of the public rely to their detriment ?

Please answer "Yes" or "No" as to each Defendant, below:

Philip Morris, Incorporated	Yes ✓	No ____
RJ Reynolds Tobacco Company	Yes ✓	No ____
Brown & Williamson Tobacco Corporation	Yes ✓	No ____
Brown & Williamson Tobacco Corporation as successor to American Tobacco Company	Yes ✓	No ____
Lorillard Tobacco Company/Lorillard, Inc.	Yes ✓	No ____
Liggett Group, Inc.	Yes ✓	No ____
Brooke Group, Ltd., Inc.	Yes ✓	No ____
Council for Tobacco Research-U.S.A.	Yes ✓	No ____
Tobacco Institute	Yes ✓	No ____

Question No. 5a

[Civil Conspiracy-Concealment]

Did two or more of the Defendants enter into an agreement to conceal or omit information regarding the health effects of cigarette smoking, or the addictive nature of smoking cigarettes, with the intention that smokers and members of the public rely to their detriment ?

Please answer "Yes" or "No" as to each Defendant, below:

Philip Morris, Incorporated	Yes ✓	No ____
RJ Reynolds Tobacco Company	Yes ✓	No ____
Brown & Williamson Tobacco Corporation	Yes ✓	No ____
Brown & Williamson Tobacco Corporation as successor to American Tobacco Company	Yes ✓	No ____
Lorillard Tobacco Company/Lorillard, Inc	Yes ✓	No ____
Liggett Group, Inc.	Yes ✓	No ____
Brooke Group Ltd , Inc	Yes ✓	No ____

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Council for Tobacco Research-U.S.A. Yes ✓ No ____
Tobacco Institute Yes ✓ No ____

Question No. 6.

[Breach of Implied Warranty]

Did one or more of the Defendant Tobacco Companies sell or supply cigarettes that were defective in that they were not reasonably fit for the uses intended ?

Please answer "Yes" or "No" as to each Defendant, below. If you answer "yes" to any Defendants, please answer whether the conduct occurred during any of the following time periods:

Philip Morris, Incorporated	Yes ✓	No ____
Before July 1, 1969	Yes ✓	No ____
July 1, 1969 thru July 1, 1974	Yes ✓	No ____
After July 1, 1974	Yes ✓	No ____
RJ Reynolds Tobacco Company	Yes ✓	No ____
Before July 1, 1969	Yes ✓	No ____
July 1, 1969 thru July 1, 1974	Yes ✓	No ____
After July 1, 1974	Yes ✓	No ____
Brown & Williamson Tobacco Corporation	Yes ✓	No ____
Before July 1, 1969	Yes ✓	No ____
July 1, 1969 thru July 1, 1974	Yes ✓	No ____
After July 1, 1974	Yes ✓	No ____
Brown & Williamson Tobacco Corporation, as successor to American Tobacco Company	Yes ✓	No ____
Before July 1, 1969	Yes ✓	No ____
July 1, 1969 thru July 1, 1974	Yes ✓	No ____
After July 1, 1974	Yes ✓	No ____
Lorillard Tobacco Company/Lorillard, Inc.	Yes ✓	No ____
Before July 1, 1969	Yes ✓	No ____
July 1, 1969 thru July 1, 1974	Yes ✓	No ____
After July 1, 1974	Yes ✓	No ____
Liggett Group, Inc.	Yes ✓	No ____
Before July 1, 1969	Yes ✓	No ____

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July 1, 1969 thru July 1, 1974	Yes ✓	No ___
After July 1, 1974	Yes ✓	No ___
Brooke Group, Ltd., Inc.	Yes ✓	No ___
Before July 1, 1969	Yes ___	No ✓
July 1, 1969 thru July 1, 1974	Yes ___	No ✓
After July 1, 1974	Yes ✓	No ___

Question No. 7

[Breach of Express Warranty]

Did one or more of the Defendant Tobacco Companies sell or supply cigarettes that, at the time of sale or supply, did not conform to representations of fact made by said Defendant(s), either orally or in writing ?

Please answer "Yes" or "No" as to each Defendant, below. If you answer "yes" to any Defendants, please answer whether the conduct occurred during one of the following time periods:

Philip Morris, Incorporated	Yes ✓	No ___
Before July 1, 1974	Yes ___	No ___
After July 1, 1974	Yes ___	No ___
Both before and after July 1, 1974	Yes ✓	No ___
RJ Reynolds Tobacco Company	Yes ✓	No ___
Before July 1, 1974	Yes ___	No ___
After July 1, 1974	Yes ___	No ___
Both before and after July 1, 1974	Yes ✓	No ___
Brown & Williamson Tobacco Corporation	Yes ✓	No ___
Before July 1, 1974	Yes ___	No ___
After July 1, 1974	Yes ___	No ___
Both before and after July 1, 1974	Yes ✓	No ___
Brown & Williamson Tobacco Corporation, as successor to American Tobacco Company	Yes ✓	No ___
Before July 1, 1974	Yes ___	No ___
After July 1, 1974	Yes ___	No ___
Both before and after July 1, 1974	Yes ✓	No ___
Lorillard Tobacco Company/Lorillard, Inc	Yes ✓	No ___

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Before July 1, 1974	Yes ____	No ____
After July 1, 1974	Yes ____	No ____
Both before and after July 1, 1974	Yes ✓	No ____
Liggett Group, Inc.	Yes ✓	No ____
Before July 1, 1974	Yes ____	No ____
After July 1, 1974	Yes ____	No ____
Both before and after July 1, 1974	Yes ✓	No ____
Brooke Group, Ltd., Inc.	Yes ✓	No ____
Before July 1, 1974	Yes ____	No ✓
After July 1, 1974	Yes ✓	No ____
Both before and after July 1, 1974	Yes ____	No ____

Question No. 8.

[Negligence]

Have Plaintiffs proven that one or more of the Defendant Tobacco Companies failed to exercise the degree of care which a reasonable cigarette manufacturer would exercise under like circumstances ?

Please answer "Yes" or "No" as to each Defendant, below. If you answer "yes" to any Defendants, please answer whether the conduct occurred during one of the following time periods:

Philip Morris, Incorporated	Yes ✓	No ____
Before July 1, 1969	Yes ____	No ____
After July 1, 1969	Yes ____	No ____
Both before and after July 1, 1969	Yes ✓	No ____
RJ Reynolds Tobacco Company	Yes ✓	No ____
Before July 1, 1969	Yes ____	No ____
After July 1, 1969	Yes ____	No ____
Both before and after July 1, 1969	Yes ✓	No ____
Brown & Williamson Tobacco Corporation	Yes ✓	No ____
Before July 1, 1969	Yes ____	No ____
After July 1, 1969	Yes ____	No ____
Both before and after July 1, 1969	Yes ✓	No ____

Brown & Williamson Tobacco Corporation, as

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Question No. 10

[Entitlement to Punitive Damages]

Under the circumstances of this case, state below whether the conduct of any Defendant rose to a level that would permit a potential award or entitlement to punitive damages.

Please answer "Yes" or "No" as to each Defendant, below:

Philip Morris, Incorporated	Yes ✓	No ____
RJ Reynolds Tobacco Company	Yes ✓	No ____
Brown & Williamson Tobacco Corporation	Yes ✓	No ____
Brown & Williamson Tobacco Corporation as successor to American Tobacco Company	Yes ✓	No ____
Lorillard Tobacco Company/Lorillard, Inc.	Yes ✓	No ____
Liggett Group, Inc.	Yes ✓	No ____
Brooke Group, Ltd., Inc.	Yes ✓	No ____
Council for Tobacco Research-U.S.A.	Yes ✓	No ____
Tobacco Institute	Yes ✓	No ____

SO SAY WE ALL, this 7 day of July, 1999

-- signed --

FOREPERSON

STATE OF FLORIDA, COUNTY OF DADE

I HEREBY CERTIFY that on July 8, 99

HARVEY RUVIN, Clerk of Circuit and County Courts

Deputy Clerk Wanda J. Watkins

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